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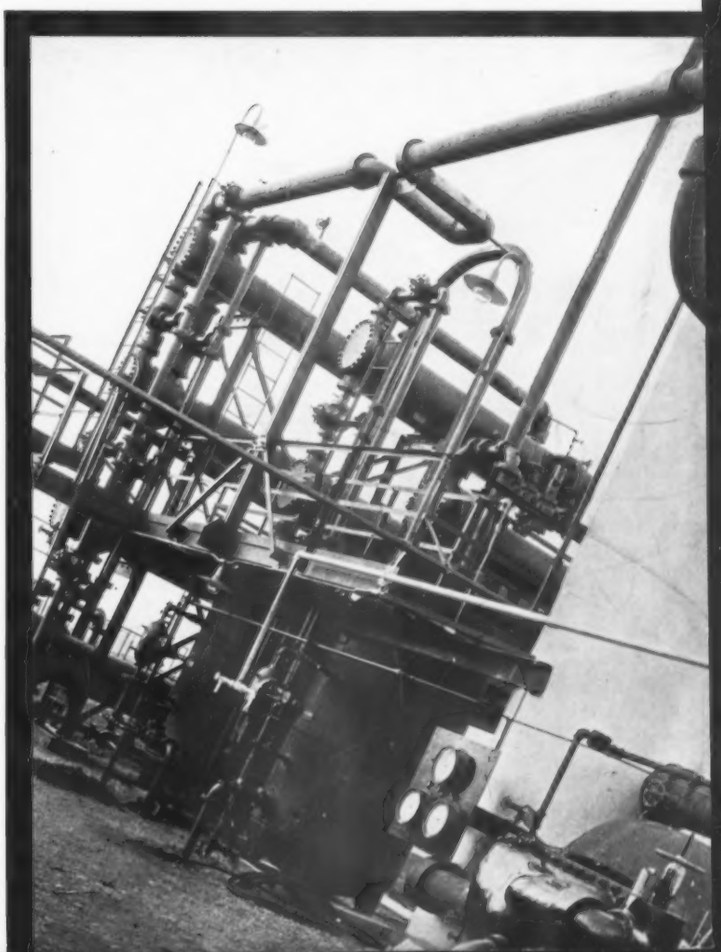

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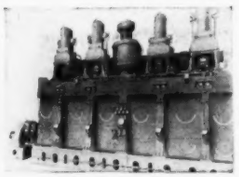

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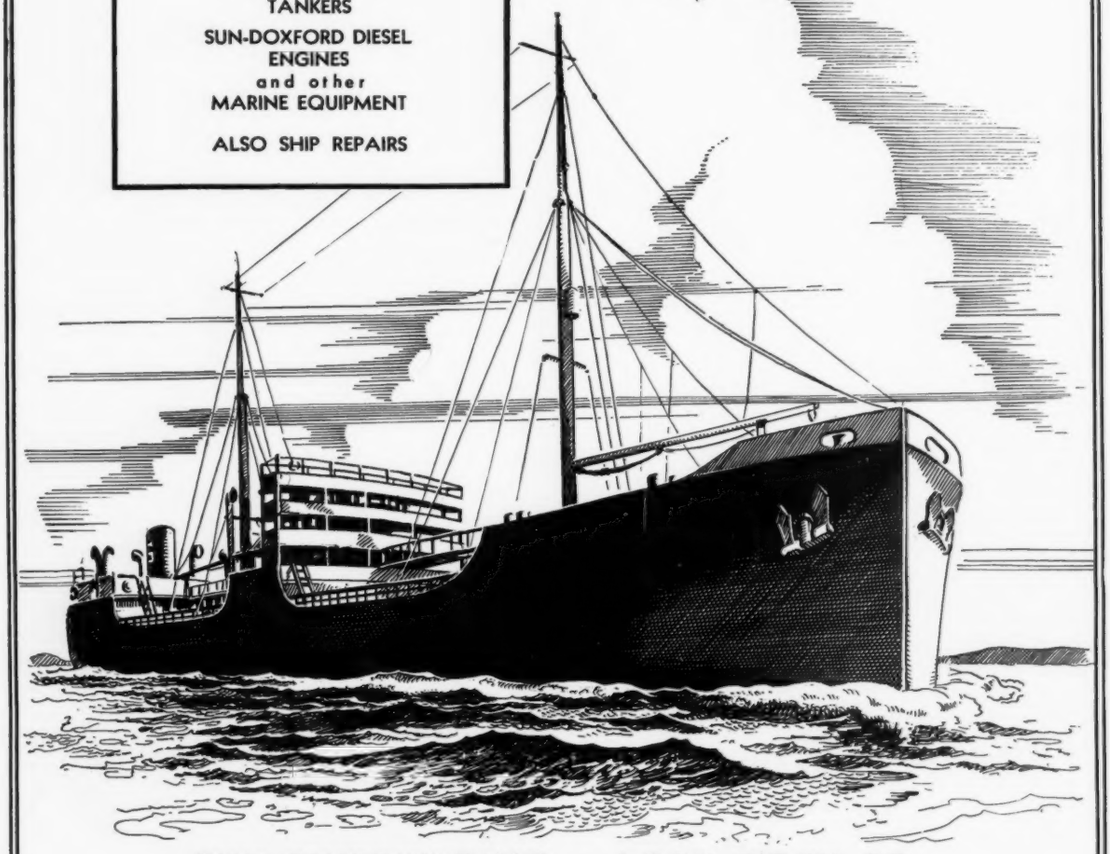

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1932

WORLD PETROLEUM

(Incorporating "Petroleum Equipment Exporter")

VOLUME III NUMBER 4

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An oil field study

By Will Connell

NEW YORK • WORLD • LONDON

PETROLEUM

International Cooperation

STABILIZATION may be a local problem so far as it relates to the supply of petroleum products for the purely domestic needs of a particular country, but stabilization of the international petroleum trade can be accomplished only through the cooperation of the national interests that figure importantly as exporters. Within the territorial limits of a particular nation regulation can be enforced by the authority of Government, but there is no power that can compel producers and handlers of petroleum from the four quarters of the globe to come together in an undertaking to maintain a balance between supply and demand or to end destructive competition. If they enter such an agreement they must do it voluntarily.

Considering the great diversity of conditions under which petroleum is produced in different parts of the world, the differences in the organization of its operating facilities and in its control, it must be acknowledged that the attempt to bring about an agreement among these international interests faces great difficulties. Yet the need of placing the international trade in petroleum on a more stable basis is so acute that efforts to overcome the obstacles are bound to continue until a sounder and more satisfactory position has been attained.

There has been much discussion within the past year or two of the need for a better understanding between the interests that are important factors in the world trade in petroleum. Plans have been put forward for the adjustment of international supplies to fit the demand of world markets. There have been repeated suggestions of the desirability of an international conference to consider ways and means of improving the existing situation. But all these proposals, ideas and suggestions remain in the realm of interesting but wholly academic speculation unless there is a willingness on the part of those whose participation is essential to the success of any one of the proposed schemes, at least to consider it, to join in such discussion as may be undertaken, to enter a conference if one is held.

In various ways at different times the associated petroleum interests of some of the principal exporting countries have indicated their attitude on the general subject of international cooperation or toward particular proposals relating to it. When the Kessler plan was published the oil industrialists of Roumania were prompt to record their readiness to accept it as a basis for joint action. More recently the American Petroleum Institute has expressed its sympathy with the principle of international cooperation. By works which are always more eloquent than words Venezuela has demonstrated its adherence to the policy of avoiding the oversupply of export markets.

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Position of Soviet Union

THROUGHOUT the discussion the one national interest of chief importance as an exporter of petroleum products whose position has not been defined is the Soviet Union. Yet by sheer weight of the growth in its volume of production and exports Russia must be counted as an essential factor in any workable scheme of world stabilization. Conjectures as to the probable attitude of the directors of Soviet oil policy and guesses as to their purposes have been numerous and divergent in character. Apparently it had not occurred to those who joined the debate on this subject that the reticence of Soviet authorities might be due to the fact that their views had not been asked and that they did not feel disposed to proffer them without an invitation.

Bearing in mind the possibility of this simple explanation WORLD PETROLEUM addressed to the Chairman of the Soviet Export organization a definite inquiry as to the attitude of Russian oil interests toward an international conference and international regulation. His reply, which is published on another page of this issue, states unequivocally that Soviet exporters have no objection to joining in a world conference or in working out measures of adjustment. The message reveals, moreover, a degree of resentment at real or imagined tendencies to ignore Russia in the consideration of international oil problems.

The statement of Chairman Riabovol is of the highest importance in making clear the position of the Soviet oil organization. A fair deduction from it is that the Russian export organization appreciates the desirability of stabilizing the traffic in petroleum and is willing to support a reasonable plan for accomplishing that result. It is a message of reassurance to the members of the world's petroleum industry.

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FOR its own welfare and the avoidance of possibly injurious restrictive legislation the petroleum industry of the United

States should consider and if possible should develop a definite position on the subject of Governmental regulation. A certain degree of such regulation exists now and it probably is inevitable that it will be extended in future. The doctrine that the public interest must be served and that private purposes which conflict with it must give way is one that finds ever wider acceptance.

Petroleum Regulation

A striking illustration of this was afforded by a decision handed down by the Supreme Court of the United States on March 21 affecting an Oklahoma statute which requires the consent of a State commission and the issuance of a certificate of public convenience preliminary to engaging in the manufacture of ice in that state. The majority of the Justices held that the making of ice was not a business touched with public necessity but the significant feature of the case was the dissenting opinion of Justices Brandeis and Stone. The opinion written by the former upholds the right of States under certain conditions to extend regulation to businesses not previously subject to control and to try novel social and economic experiments. One passage in the opinion reads:

"Increasingly, doubt is expressed whether it is economically wise, or morally right, that man should be permitted to add to the productive facilities of an industry which is already suffering from overcapacity. In justification of that doubt men point to the excess capacity of our productive facilities resulting from their vast expansion without corresponding increases in the consumptive capacity of the people."

If this view can be held to apply to a business like the manufacture of ice how much more closely does it fit the situation in petroleum where the commodity involved is a non-replacable necessity! There is little doubt that as time goes on the authority of State or Federal Governments to broaden the scope of their regulatory powers applied to many kinds of business will be upheld by the high court of the land. At the present moment the question of the right of a State to restrict or prevent the production of oil when it involves a waste of this natural resource is before the court for decision.

The question before the petroleum industry, therefore, is not one of regulation versus complete freedom of action. It is rather a question whether the industry will be able to establish a degree of self-regulation that will make its operations conform broadly to the public interest or whether, by indulging in unbridled waste and destructive competition, it will force Governmental agencies to assume direction and control. There is a further question of the degree to which Governmental control is necessary and desirable, and whether it is better that it be exercised by State or Federal authorities.

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THAT the industry itself has not been indifferent to the importance of these questions is demonstrated by the attention that has been directed at meetings of the American Petroleum Institute and in discussions in the trade press to such matters as unit operation, proration, uniform tax laws and other subjects relating to the orderly conduct of the business. A rapid growth within the industry of sentiment in favor of united action for the promotion of the common interest as distinguished from temporary individual advantage can be traced in recent years. This is an encouraging sign because the most effective and enduring progress in any industry is that attained through the education of its own members to the habit of acting with full regard to their collective interest.

Industry's Part

Everyone who has studied this problem recognizes that there are limits to what the industry can do for itself. It cannot force recalcitrant property owners or lease holders to respect the rights of their neighbors beyond the point of legal compulsion. To enforce common rights to a particular pool or to regulate production so that no one group or section shall take unfair advantage of other producers or producing districts is a function of the State through exercise of its police power. Really effective control, therefore, requires, first, an enlightened sentiment and constructive policy within the industry, and then the exercise of State authority to make this fully effective.

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Is there any reason why the petroleum industry and State authorities cannot work together effectively and constructively in the accomplishment of these ends? We believe not. State officials are much closer to the industry in their particular sections than Federal authorities possibly can be. They are likely to have at heart the welfare of the petroleum industries of their own commonwealths to a degree that will lead them to defend their interests much more vigorously than would representatives of the central Government, and they are far more amenable to local public sentiment.

A Workable Policy

The great progress that has been made within the past few years, not only in developing constructive State policies regarding petroleum but also in working out a basis for interstate action to secure uniformity in the application of these policies, holds more hope for the stabilization of the petroleum industry of the United States and its orderly development along lines that will permit of profitable operation than any other developments that have taken place within this period.

If the Federal Government will confine its interference with the industry to the modification of existing laws that interfere with cooperative action, to permissive legislation that will enable State bodies to make agreements and work together, and to interpretation of State legislation through the Supreme Court, there is reason to believe that progressive leaders of the industry itself and the State authorities who are closely in touch with it will be able to erect a body of policy under which the petroleum industry can live and prosper.

▼

WALTER C. TEAGLE'S contribution to the symposium of views of national business leaders regarding the stabilization of American industry is published on another page of this issue. It was written primarily for the general public rather than for oil men and since the general subject under discussion in the volume of which this article forms a chapter is the establishment of a basis for greater industrial stability Mr. Teagle devotes his attention particularly to problems connected with oil field development and oil production. His paper presents such a sound and constructive view of the needs of the American petroleum industry in this phase of its operations that WORLD PETROLEUM is very pleased to have the opportunity of publishing it.

Teagle on Stabilization

Mr. Teagle states the case for conservation and for the regulation of oil field development with full regard to the rights of ownership and for the broad interest of the general public in the economic utilization of this great natural resource. He does it in a spirit of moderation but with convincing forcefulness. In fact, the six points which Mr. Teagle suggests as a basis for voluntary action might well be adopted as a platform by the American oil industry. Accomplishment of the objectives which they contemplate would establish the industry on a basis that would enable it both to serve more effectively than it can at present its own interests and those of the public in its domestic operations and to hold its own in rapidly changing international competition.

Soviet Export Head Defines Position

Declares Russian Authorities Not Opposed to Joining World Conference or Plan for International Stabilization. Expansion Program Inspired by Industrial Requirements.

Statement of Soyouzneft Export Chairman

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To the Editor of the Journal WORLD PETROLEUM, *New York:*

IN reply to your telegram dated 4th March I beg to state the following: The development of the Soviet oil industry is first of all accounted for by the rapidly increasing requirements of the Soviet home market, owing to the tremendous growth of our country's industry, transport, agriculture, etc. Here are some figures: In 1931 the oil output in the Soviet Union amounted to 22,300,000 tons as against 14,100,000 tons in 1929, the increase being 8,200,000 tons. Our oil exports amounted in 1931 to 5,300,000 tons as against 3,800,000 tons in 1929, showing an increase of 1,500,000 tons.

These figures may serve as a most convincing reply to those who endeavor to explain the crisis in the oil industry and the drop of prices on the oil market by contriving to make it appear that we intend flooding the world with oil.

You and your readers are surely aware that but recently some of the leading men of the world's oil industry have been suggesting new means for the regulation of the oil production, recommending in that connection that Soviet oil be entirely ignored and predicting a drop in Soviet oil exports. All such schemes are scarcely likely to create a favorable basis and an appropriate atmosphere for raising the question as to how the world's oil trade can be regulated.

Soviet oil exporters never before have refused and do not now refuse to discuss means of regulating the world's oil market and to work out joint measures due to be taken.

As regards the misery threatening oil workers (of other countries) which you mention the attempt to impose responsibility for this on the Soviet oil export is a ridiculous allegation to which no reasonable person can attach any serious weight. The continual increase of unemployment in all lines of trade and industry in capitalistic countries is in no way connected with the Soviet oil export trade. To the contrary Soviet purchases abroad, the limits of which depend upon the volume of our exports, do not contribute to the increase of unemployment, but largely contribute to the decrease of unemployment in quite a number of countries.

SOYOUZNEFTEEXPORT, RIABOVOL, CHAIRMAN
Moscow, U. S. S. R.

WITHIN the past few years two factors have focussed an increasing share of the petroleum trade's attention on Soviet Russia. One of these has been the rapid expansion in Russian production and export of petroleum products. The second has been the mystery which in the minds of many persons has surrounded Soviet activities and purposes and the uncertainty as to the probable extent of Russia's development as a competitor in the international field.

Statistics of Russian crude production, refining activities and exports of petroleum products show a rapid and continuous expansion during the past decade. Crude output in 1931 was more than five times as great as it had been ten years before; refining operations had multiplied more than seven times in the same period; exports had increased more than 3,000 percent. The latter comparison may be misleading since Russian exports were extremely small prior to 1925 but they have risen from 1,217,600 bbl. in 1922 to 40,158,740 bbl. in 1931. From being a factor of negligible consequence in the international trade at the beginning of the ten year period the Soviet Union has risen to second place as a producer being outranked only by the United States. Its exports exceed those of all countries except the United States and Venezuela. The figures of Soviet production, refining and export in each of these ten years, as well as in 1913, are given in the accompanying table.

Russia's Oil Operations

Year	Production (Barrels)	Percent change	Refining (Barrels)	Percent change	Export (Barrels)	Percent change
1913...	67,400,000		39,916,000			
1922...	34,000,000	−50	20,000,000	−50	1,217,600	
1923...	38,500,000	+13	24,500,000	+22	2,386,939	+96
1924...	44,300,000	+15	31,600,000	+29	5,503,469	+130
1925...	51,500,000	+16	34,500,000	+ 9	10,433,310	+90
1926...	60,800,000	+18	41,200,000	+21	11,209,530	+ 7
1927...	75,200,000	+24	48,600,000	+18	15,509,180	+38
1928...	85,400,000	+14	61,400,000	+26	20,760,000	+34
1929...	98,500,000	+16	76,500,000	+25	29,033,672	+40
1930...	133,200,000	+35	114,000,000	+49	36,551,591	+20
1931...	156,300,000	+17	132,000,000	+16	40,158,740	+10

In the original five-year economic plan the goal set for petroleum output for the year 1932–33 was 19,000,000 tons or 133,000,000 bbl. This volume of production actually was realized in 1930, in two and one-half years instead of five years. The goal now set before the industry is an outturn of 630,000,000 bbl. of crude in 1937. In view of the rapid enlargement of output during the past five years this tremendous program of expansion naturally creates a degree of apprehension among members of the petroleum industry.

In the discussion of proposals and projects for the stabilization of the petroleum industry Russia has been treated usually as the enigma of the situation. It has been assumed in some quarters that those who direct the oil policy of the Soviet Union were irrevocably committed to the fulfilment of the Five-Year Plans, that the Russians were unwilling to join in any movement for international conservation or even that it was their deliberate policy to inflict the heaviest possible loss upon the petroleum producers of capitalistic countries.

In view of the lack of information as to the actual position of the Soviet oil organization and the unfounded character of many of the statements circulated regarding it, WORLD PETROLEUM addressed to K. S. Riabovol, Chairman of the Soyouznefteexport in Moscow, a cablegram inquiring specifically as to the attitude of the Soviet organization toward participation in a world conference to consider plans for the stabilization of the international oil trade and as to their dis-

(Continued on page 151)

Reforming the Attitude Toward Petroleum Property Rights

Modification of Anti-trust Laws — Voluntary Co-operation — State Enforced Proration — Interstate Compact. Advocated by Walter C. Teagle, President, Standard Oil Co. (N.J.)

Kaiden Studios

W. C. Teagle, President, Standard Oil Company of New Jersey.

THE president of a great international petroleum company sets forth in a chapter of Samuel Crowther's recently published book, "A Basis for Stability"* the specific measures required by the problems peculiar to the oil industry. Legal recognition of established facts, cooperation of producers, conservation by State and Federal authorities are recommended for the improvement of the industry. Continued development of trends that are already accepted as sound is offered as the road back to prosperity for the United States oil industry.

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THE lumberman owns the timber that stands on his limits and the miner the minerals buried in his claim; but in fact, and sometimes in law, the oil producer does not own the oil stored in his land. All that he has is a right of access to the oil. Others may draw upon it because oil, in its natural reservoir, is not amenable to the time-honored laws of property. Rather, like a silver dollar tossed into a hungry crowd, it is to be possessed by the lawlessness of scramble. No other natural resource may be scrambled for in this way and so the petroleum industry faces unique difficulties in trying to eliminate the waste and overproduction which are demoralizing it. Methods that will eliminate waste and overproduction in other industries are of no avail for the petroleum industry.

The lumberman can operate his property economically and efficiently. He can cut as much lumber as the market requires. He may decide to suspend operations awaiting the development of a better market. So, too, with the miner. But the oil producer may not do this except by consent of his neighbors that they will not invade his property and capture his oil. If they refuse such consent he has no recourse against them. If they give consent all parties to the agreement may be suspected of a combine in defiance of anti-trust laws.

Not only may the oil producer's neighbors take from him the oil that is rightfully his. At the same time they may damage his property so that he will be able to recover only a small part of the oil that they do not carry away. It is as if a piratical neighbor invaded a timberland, cut to his heart's content and fired a great part of the timber he left standing.

So far as unproduced petroleum is concerned property laws do not safeguard the owner's rights.

Oil is fugitive. It flows through the sands in which it is stored towards the point where pressure is lowest. This point is at the foot of producing wells. In a field where there is competitive operation the property owner or lease holder who might wish to conserve his oil for a time when there would be a better market for it, could do so only by building bulkheads around the oil sands beneath his land. Even more important: only by building such obviously impossible bulkheads could he keep the sands beneath his land in a condition to give him a maximum production and an economical recovery from his property. Well, he cannot build these bulkheads, so what can he do to protect his rights to the greatest extent possible? He has no choice other than to recover the oil as quickly as he can, regardless of market, regardless of his neighbor's rights, regardless of economical practice. Failing this he will be permitting his neighbor to draw his oil and to lessen the potential production of his property.

Oil is sealed in its natural reservoir by a cap of impervious rock. With the oil there is gas. Beneath the oil there usually is water. The gas seeks to expand. The water seeks to rise. Gas and water are nature's agents for bringing the oil to the surface of the land once the drill has punctured the rock cap. They cause the pressure which drives the oil towards the well. Without this pressure the oil will not flow towards the well. It will just lie there in the sands, thousands of feet below ground. The water and the gas move, too, towards the foot of the well which is the point where pressure is lowest. The gas moves quite rapidly. The water does not move as rapidly as the gas but it moves more readily than does the oil which has a thicker body and so encounters more resistance in passing through the sands. It is as if Nature wanted to release the gas and the water and to keep the oil. If the producer allows the gas and the water to move too quickly Nature succeeds in keeping a lot of the oil. This happens because the pressure of the gas is lost and because the water has a tendency to bypass the oil and itself get to the foot of the well instead of remaining beneath the oil and steadily pushing it towards the well. The water may rise, too, at various parts of the pool where pressure has been reduced, and by rising it may create barriers that will prevent the free flow of the oil through the sands. Such a water barrier may cut a producer off from a large part of the oil stored in his land and make it impossible for him ever to recover it.

Oil is unlike other minerals because it does not remain just where Nature stored it until the time it is brought to the surface of the earth. It isn't the least concerned about property lines established by man above ground. It flows towards the wells, wherever they may be, and that is why one producer may recover oil

that really belongs to another producer. Usually the courts hold that the producer who first captures oil and gas on the land above the oil pool is entitled to possess that oil and gas, whether it comes from beneath his own land or from beneath the land of another producer. So when land above a pool is owned by many people many wells are drilled. The oil is brought to the surface regardless of each landowner's right to it, regardless of whether each producer has a market for it and regardless of dissipation of gas pressures and accelerated intrusion of water which will result, sooner or later, in placing enormous quantities of the oil beyond hope of recovery. The lawlessness of scramble is reenacted with the development of every new oil field in which there are many landowners who produce on a competitive basis. Each producer wants to be first to capture the oil. Drilling is done feverishly, carelessly and extravagantly. Yet this is only the beginning of a chain of reckless, extravagant and unbusinesslike events. As the oil is produced in greater quantities than are required by the market it is stored at heavy cost above ground. The producer offers it for sale for whatever he can get and the law of supply and demand is there to see that he does not get much. Refiners are tempted by bargain prices to buy oil in excess of their needs and to make more gasoline than the market demands. So there is not only overproduction of crude oil but there is overproduction of refined products too. This, in turn, leads to overexpansion of marketing facilities and to all the evil practices that creep in when marketers have more products on hand than are required to satisfy public needs. The forces that cause instability in the production of crude petroleum lead inevitably to instability in refining and marketing practices.

The ills of the oil industry are peculiar to that industry and require peculiar remedies. These are modification of anti-trust laws, cooperation among producers and the exercise of the policing power of the States.

The most important facts with regard to the problem are that if waste in the overproduction of oil and gas is to be prevented the individual lease cannot be the unit of competition in oil pools, and that competition between pools must be reasonably regulated. These are the peculiar facts relating to the production of petroleum which do not apply to the operation of mines or timber limits, or other enterprises concerned with the production of raw materials. They are facts that have their being in the fugitive nature of petroleum, in the way in which petroleum is stored below ground and in the way in which it is recovered. We cannot change the nature of petroleum. We cannot change the nature of its storage. We cannot overcome the elementary principles that govern its recovery. So we must adapt other considerations to the needs of the industry if we are to rescue it from the engulfing sea of oil.

To stabilize the oil industry and to prevent waste of gas and of oil, production must be curbed and in pools where there is divergent ownership ratable production must be secured either by voluntary agreement among operators, which is the more desirable, or by force of law. Production must be restricted to demand and the restriction must be applied on an equitable basis to each operator. Development of an oil field must be such as will ensure proper spacing of wells, proper control of pressures and regulated withdrawals of gas and oil. All operating practices must be governed by the physical conditions existing in the pool.

In fields where waste exists production must be restricted to the requirements of the available market; producing methods and location of wells must be regulated and each producer must be given his ratable share of the market. In other words the entire field, not the individual lease, must be the unit of operation and competition. Where overproduction exists producers should agree to a limitation of production to market demand and should prorate production as between States, districts and pools. Within the pool itself they should work out a program of unit production to supply whatever part of the available market may be allotted to the pool.

However, serious difficulties lie in the way of voluntary cooperation and agreement. Men differ as to the relative values and potential production of their properties. They disagree as to the producing methods that should be employed. Some producers are not concerned with the ultimate recovery of oil from the pool but want only the immediate maximum production. Some men are by nature indifferent to the common good and to the rights of others. For these reasons, and for others, it is difficult to arrive at agreements in the individual pools; and it is even more difficult to reach agreements between various fields and between various districts. Then, too, there are the anti-trust laws to consider. In some States agreements to control the products of mine or factory are illegal and in those States producers are effectually prevented from entering into agreements for cooperative or unit development of oil fields. Furthermore interstate agreements also would be necessary and these would run foul of Federal anti-trust laws.

Voluntary cooperation within the industry is not sufficient to remedy its ills. It would not be sufficient even if legal restrictions on cooperation were removed, although tremendous progress would result from the removal of such restrictions.

To protect the correlative rights of producers and to enforce adequate conservation laws the police power of the State must be employed. This is a matter for State, rather than Federal action, but cooperation among various States and among the operating units of the industry will also be needed if production in the country at large is to be limited to the nation's markets. The solution of the problem therefore depends upon voluntary cooperation within the industry, upon exercise of the police power of the State and upon cooperation among the various States concerned and among units of the industry in the different States. To permit this both State and Federal anti-trust laws will need to be revised.

The intricacies of the petroleum industry's problem are such that the detailed application of the solution cannot be set down within the limits of an ordinary article. What follows is therefore only an outline of the authoritative recommendations that have been made from time to time to stabilize production and to prevent waste of oil and gas.

There are some who believe that there should be a limitation of imports of oil. The domestic producer in that case could not justify his failings by pointing to evil practices in other countries. This limitation of imports might be achieved by limiting production in other oil producing countries; by limiting exports from such countries or by agreement among importers in the United States. Limitation of foreign production or of imports should bear a reasonable ratio to the limitation of production in the United States, and it is suggested that to make this effective Congress might empower the President to invoke a tariff on oil imports when the desired ratio is not maintained.

There should be rigid curtailment in the several producing States in this country. This should be accomplished by voluntary action in so far as possible and, where necessary, by the exercise of the police power of the State.

Under the heading of voluntary action come the following six major considerations:

(1) An educational programme to convince producing units of the wisdom of buying acreage in oil fields with the purpose of unit operation. This would avoid widely scattered divergent ownership and would prevent orgies of drilling and uneconomical development.

(2) Unitization of pools before development is begun should be encouraged and unitization agreements after production has begun should be encouraged and made lawful.

(3) Where unitization cannot be fully effected much could be done by cooperative development. Agreements could be reached by operators governing spacing and timing of wells so that fields would not be drilled more closely or more frequently than the interests of economy and efficiency require. Agreements should also cover rate of production, maintenance of pressure and other considerations affecting ultimate recovery and economical operation.

(4) Anti-trust laws should be revised to permit of such agreements. The public interest could be safeguarded by making all agreements subject to approval by the conservation agencies of the States. New Mexico and California have already enacted legislation of this character.

(5) There should be interstate action to set up a committee representing the conservation agencies and the State Governors. This committee should work with the Bureau of Mines, the Federal Oil Conservation Board, other Federal agencies that might be helpful, and with the American Petroleum Institute and other organizations within the industry. A function of this committee would be to determine market demand. It is believed that this would in time lead to the creation of an interstate commission along the lines indicated some time ago by the Secretary of the Interior.

(6) In times of general overproduction the units of the industry should agree upon the curtailment necessary and should prorate it to the various producing areas. This would require modification of Federal and State anti-trust laws. If it is considered that the public interest requires the supervision of such agreements a fact-finding body such as the Federal Oil Conservation Board or a State Commission might be authorized to determine whether conditions warrant such agreements and, if advisable, by approval make the agreements immune from anti-trust laws.

In cases where the principles set down in these six suggested regulations were not voluntarily accepted it would fall to the police power of the State to enforce them. For instance, the police power of the State would enforce, if necessary, the curtailments recommended by the fact-finding committee. Similarly it would devolve upon the State to enforce the prorate schedules upon the separate owners in each pool.

In the exercise of the police power the conservation commission should have at its command the experience and knowledge of a non-political advisory board composed of oil men. These men would be appointed for long terms so as not to be subject to political influence and their remuneration should be such as to attract the best ability available.

Where necessary the conservation statutes in the several States would be strengthened so waste could be prevented and prorate production enforced. These statutes would authorize limitation of production to market demand and would make it impossible for any single operator or group of operators to dissipate the gas energy or water drive of a field upon which all operators in that field are dependent for the recovery of the oil that is rightfully theirs. The statutes would also provide against the conservation agencies having their hands tied during such times as their proration orders might be under attack in the courts. Otherwise, unlimited waste might ensue while their orders were the subject of legal attack.

From time to time surveys should be made to determine a fair participation in the available market for each field in each producing State. To prevent the waste incident to the abandonment of small, scattered fields, flush fields should be subject to most of the curtailment. This would require cooperative efforts by producers and purchasers of crude together with the conservation agencies involved.

Addition to storage should be prohibited except when necessitated by physical operating conditions.

Allocation of available markets to fields contemplates a proportionate restriction on leases and on withdrawals. Each producer would share in the market to the extent of his allowable production.

So as to discourage unnecessary drilling there should be a definite policy of immediately prorating all new fields. Before operators have had an opportunity to begin unnecessary drilling a programme for orderly development should be laid down and it should be rigidly enforced. In this the conservation agency could assist by requiring from each operator before granting the original drilling permit complete information regarding his holdings and his plans for their development. Permits might be withheld until the conservation agency could establish a programme for the economical development of the field as a whole.

As a basis for rules prescribing the proper spacing of wells, efficient drainage limits should be determined. Unnecessary drilling would then be avoided and, at a later period, more intensive development would permit of maximum recovery.

To prevent excessive withdrawals of natural gas and consequent intrusion of water in localized areas of a field, ratable purchases of gas should be enforced.

Incorporated in the conservation laws of each State, so as to facilitate their enforcement and to ensure equity among owners of a pool, should be this express provision: that one landowner or his lessee may enjoin a neighboring owner or lessee from producing oil in excess of allowable production where it can be shown that this excessive production results in drainage of oil or gas from beneath the complainant's land and the complainant should be able to recover for the value of any oil so drained and should be entitled to damages for losses resulting from dissipation of gas energy, encroachment of water, or other consequences that may reduce the ultimate recovery of oil from the complainant's land. The recommendation for such a statute arises out of the rule of property whereby the producer becomes the owner of the oil produced through his well even though the oil is drained from a neighbor's land. This rule is a rule of convenience. It was adopted at a time when there was no accurate knowledge of the habits of oil underground. It is in conflict with an equally well-established rule in some jurisdictions that the owner of a tract of land is also the owner of the oil and gas located below it.

Today it can be determined with approximate certainty what quantity of recoverable oil lies below each section of an oil field and so the rule of convenience should no longer apply. The rule should be that ownership of gas and oil goes with the land and that the owner is entitled to recover it or an equivalent quantity under conditions that do not prejudice the rights of neighboring owners. It may be that because of the conflict between two established rules, one fundamental in nature and one a rule of convenience, the Legislatures in certain jurisdictions could enact a law fixing the rule of property on the fundamental basis without impairing vested rights in violation of the Fourteenth Amendment of the Constitution. In any event, if this cannot be done, the police power of a State can be employed to protect the correlative rights of the various owners in the oil pool.

Broadly speaking, prevention of waste of the oil and gas resources of the United States requires education of the public and of the industry; fewer restraints by anti-trust laws, both State and Federal; and the enactment of laws to invest the conservation agencies with the power to serve the public good effectively. The public and the industry must be educated to a new conception of the responsibility of each producer in a pool to each other producer in that pool. They must also learn to realize the responsibilities of the individual producer to the entire industry. Revision of anti-trust laws must be such

(Continued on page 177)

Independents Curb British Sales Activity

High Gallonage Unattractive with Business Conducted at a Loss—Price Advance Likely to Bring Renewed Competition—Developments in Iraq Situation.

LONDON, March 15.

WHILE there has been no particular change in British marketing conditions the situation here appears to have been clarified in one respect. At any rate it seems to be accepted in trade circles that it is not the intention of the Government to accord a preference to any particular company or group of companies and that there is no possibility of the adoption of the quota system proposed when the late Labor Government was in authority.

There is no evidence that definite assurance to this effect has been extended and, as previously pointed out in this correspondence, the import duties act permits the change of rates and regulations at any time. Whatever the basis for the opinion, however, the companies operating here appear confident that they will be left to work out their own salvation without interference from the Government.

Salvation, to some at least, appears to lie in restricting petrol sales since the business can be carried on only at a loss, and the bigger the trade the bigger the loss. According to current reports Messrs. Cory Bros. are limiting their new sales of petrol to their own filling stations and to sales ex-tank on which they maintain relatively high prices. The Petroleum Storage and Finance Corporation, subsidiary of Standard Oil of Indiana, seems to be less aggressive in extending its sales territory and the R. O. P. (the Soviet agency) is said to be curtailing supplies in various directions.

It seems to be reasonably certain that the big supply contract for kerosene which the R. O. P. has had with the Medway Oil and Storage Company will be allowed to lapse at its termination April 1. It is believed that other contracts will not be renewed on expiration and that the Soviet organization will revert to a position of complete independence. This is not taken to mean that it will use its position to attempt to build up its influence by cutting prices, but rather that it will be satisfied to restrict operations until such time as conditions are more favorable to expansion.

It might seem that this course on the part of the independents was simply playing into the hands of the Royal Dutch-Shell-Anglo-Persian combination and the Anglo-American. If persisted in it will of course add to the total volume of business handled by these concerns but there is small satisfaction in that so long as the business is taken at a loss and if the attempt is made to raise prices, unless a definite understanding is arrived at, it will be the signal for a renewal of strenuous competition. For the moment there is no indication of an early change in the situation and a waiting game apparently is being played all around.

REPORTS are in circulation that April will see the advent of a new asphalt company with works on the East Coast. According to these reports two of the men associated with this enterprise will be David Filitz, formerly of the United Oil Importers which is now in process of liquidation, and Paul Dormann, a Russian identified with the Service Petroleum Company, a concern operating Roumanian properties. It is rumored also that one of the vendors of Nitag, the German sales organization recently acquired by Standard of Indiana interests, will have some connection with the enterprise. Through its subsidiary, the Ebano Company, Standard of Indiana is now established as one of the three leading companies in petroleum asphalt.

DEVELOPMENTS in Iraq remain a subject of deep interest in trade circles. While it was announced some time ago that the Iraq Petroleum Company had composed its differences with the Iraq Government and would proceed at once with arrangements for the construction of its pipe lines from Kirkuk to Haifa and Tripoli there appears to be a latent feeling on the part of Iraq officials that the work is not being pushed as vigorously as might be. There are reports too of a lack of entire harmony among the international partners in the enterprise. According to the version current here the French interests are the only ones that are pushing for rapid prosecution of the work while British and American interests are willing to proceed in more leisurely fashion. Dissatisfaction of the Government of Iraq with the rate of progress being made probably is explained by the terms of the concession which provide for payment, in addition to the annual rental of £400,000, of a royalty of 4s per ton on crude. In fact there are reports, which lack confirmation, that the Iraq Petroleum Company has had to pay "compensation" amounting to nearly £1,000,000 to keep the peace with the Government.

The attitude of the Iraq Government appears to have been stiffened by the arrangement recently made with the B. O. D., Ltd., to undertake development on the west side of the Tigris. According to report the royalty to be paid by the B. O. D. is the same as that charged against the I. P. C. but the rental is less and runs only for seven years with a provision that it is to end before the expiration of that period if royalty payments equal the agreed rental. The terms of the agreement are supposed to have been fixed during the recent visit to this country of Nuri Pasha, Iraq Prime Minister, and to require ratification by the Iraq Parliament before becoming effective.

Ambitious plans for the early development of its holdings are contemplated by the B. O. D. according to statements current here. It is said, for example, that instead of attempting to arrange for transportation of its oil through the pipe lines of the Iraq Petroleum Company the new organization will build a double line of its own from the area adjacent to Mosul to a point on the Mediterranean just south of the Gulf of Alexandretta. The route is most direct and the distance only about 500 miles. The total expenditure required for drilling, storage, pipe lines and other equipment is estimated at £10,000,000 of which the first £1,000,000 has been arranged by the signatories.

SUN petroleum products will be marketed in Great Britain through the British Sun Oil Company, Ltd., subsidiary of the Sun Oil Company, Philadelphia, Pa., U. S .A., which has just opened offices at Bush House, London W. C. 2. Arthur Stephens, managing director, is in charge of the company's affairs.

Iraq Pipe Line Construction Activity

Specifications for Materials Beginning to Be Issued —Equipment Must Be on Ground Within Year to Ensure Completion of Line by End of 1935 According to Concession—Big Fleet of Trucks Required.

START has been made on the issuance of specifications and the purchase of materials for what is one of the largest constructional projects in the world today, involving an expenditure of over $50,000,000. This is the projected bifurcated crude-oil pipe line of the Iraq Petroleum Company which is to extend from Kirkuk, Iraq, to two ports on the Mediterranean branching at Haditha. It is an international undertaking in many of its aspects. Not only does the line run through four countries, Iraq, Trans-Jordania, Palestine and Syria, including sections inhabited by warlike Arabs; but the ownership is divided between British, Dutch, American and French oil interests. Control is shared by six companies and in two of these national Governments hold important shares. The line starts from a British mandated country which is about to receive recognition of its independence by the League of Nations. Furthermore, there are reports that an additional line may be built by another interest holding an Iraq concession.

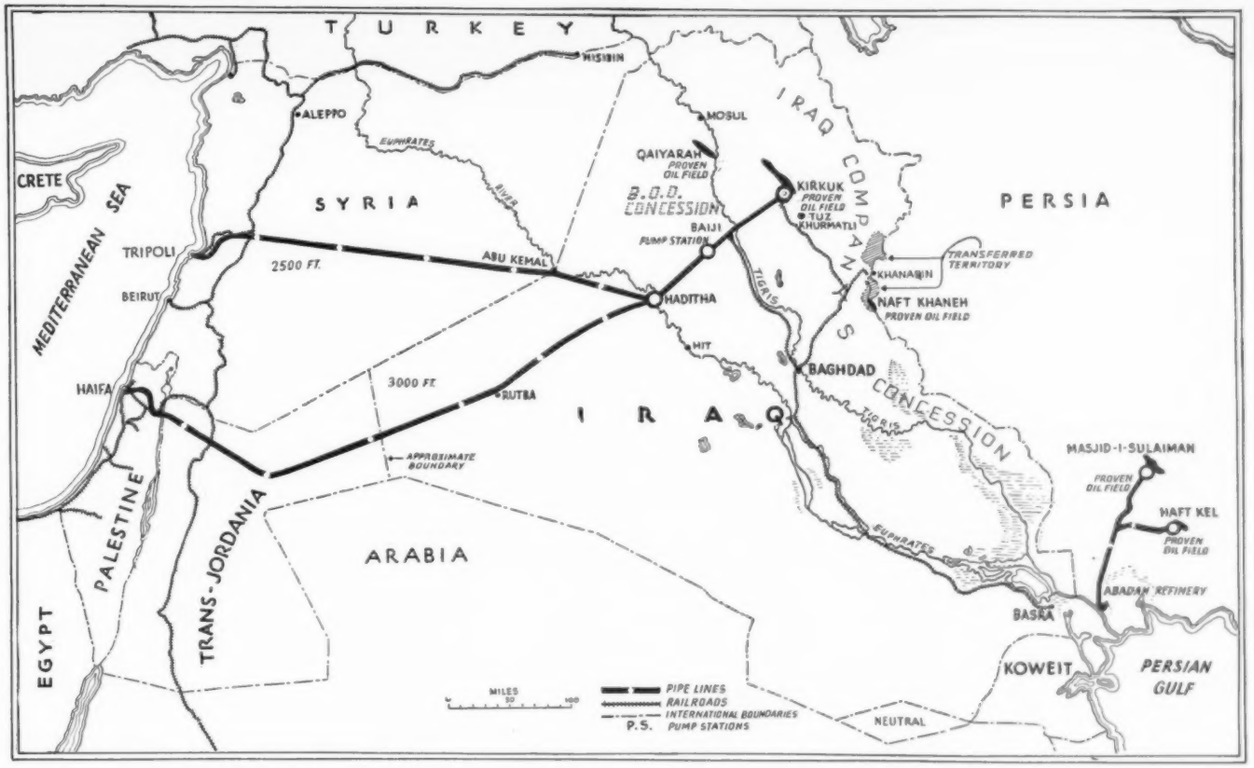
From the point of view of the petroleum trade an important consideration is that the flow of Iraq oil to the sea may create marketing difficulties, unless European and Near East consumption considerably increases by the end of 1935, when the line is due to be put into operation. Unquestionably there are vast quantities of oil in Iraq. Up to a year ago more than 20 wells had been brought in, on the Iraq Petroleum Company's concessions. Some of them came in as gushers exceeding 100,000 bbl. per day initial flow, the chief discovery well being brought in at 1,521 ft. depth with 36 gravity, high sulphur, oil. Just over 100 miles away at Naft Khaneh and Chia Surkh, in the Transferred Territory, formerly Persia—and now Iraq, are other huge oil fields, tested but barely scratched by the Anglo-Persian Oil Company, which also controls the great Persian oil fields about 250 miles further southeast at Masjid-i-Sulaiman and Haft Kel.

The terms of the pipe line agreement with the Iraq Petroleum Company would seem to permit Anglo-Persian to utilize part of the capacity of the Iraq line should a link later be made between Naft Khaneh and Haditha which may modify the necessity of shipping Persian oil around Arabia and through the Suez Canal. Anglo-Persian is interested in the Iraq line to the extent of 23¾ percent ownership, plus a certain undetermined percentage of the total oil passing through the line, which under the old contract was 10 percent of the production of eight square mile plots.

It may reasonably be expected that specifications for material and equipment will be issued with considerable rapidity, since, if the line is to be completed within the time limit set by the concession, all shipments must be on the ground within twelve months. It is a long haul to much of the territory covered by this 1300 mile system. All the supplies have to be carried by motor truck, and possibly trailers, from Haifa, Palestine, where a constructional base already has been established, and from Tripoli, Syria, where there will be another terminal. Part of the hauling may be done on the short railroad sections. There are no roads, simply trails over some broken and mostly sandy country. Terminal stations also will be established at Hasar, Basra, Tripoli, and Haditha.

To date, eight 12–15 ton trucks of Four Wheel Drive, International Harvester, Scammell, Thornycroft, and Renault makes (American, British and French) have been ordered to handle the various temporary sectional buildings for terminal,

One of the flags posted by the Iraq pipe line surveying party. The section shown is in the coastal mountain district.



Route of the Iraq bifurcated pipe line to the Mediterranean. The map also shows Anglo-Persian's oil fields at Naft Khaneh Masjid-i-Sulaiman and Haft Kel.

camp sites and facilities. Before long a very large fleet of trucks and tractors, aside from trench diggers, will obviously be needed as 900 to 1300 miles of 12¾ dia. steel pipe will be delivered by steamer to Haifa, Tripoli and Basra at the rate of 16,000 tons per month beginning June 15 next. This must be trucked inland. Results from the operation of the trucks initially ordered will be the deciding factor in the purchase of the complete fleet.

Then will follow the Diesel engines, line pumps, tanks and tank farm equipment. This material, especially the Diesel bedplates, frames and crankshafts, will form a formidable transportation task because of their size and weight and the absence of roads. Specifications have not yet been issued on these; but there will be three large Diesel or Diesel-electric pump stations on the Haditha-Kirkuk section where the line and pumping units will be in duplicate. Ten or eleven additional pumping stations will be erected at strategic points along the lines leading to Haifa and Tripoli.

As previously stated in WORLD PETROLEUM, H. S. Austin, president of the Ajax Pipe Line, has been loaned to the Iraq Petroleum Company to take charge of the construction of the line. He is assisted by Captain M. M. Stuckey who was associated with the construction of the Andean National Pipe Line through the jungles of Colombia. Other engineers, among them Clarence Mulligan, who will be pipe line superintendent, and George O'Connor who will assist him, have gone to Iraq to aid in the work.

One of the problems in connection with the line is that it will be subject to severe corrosion owing to the nature of the country through which it will pass. Its amortization life may be less than ten years. Quality, therefore, is of greater importance than price. While steel pipe can be purchased at less cost in Europe than in the United States, the American companies were given the opportunity to bid, probably on account of their extensive experience in the manufacture of steel pipe for oil industry work. In fact all the countries having capital involved in the I. P. C. were given equal opportunity to bid. Exchange differences and quality may have a bearing on the purchases. Bids on the pipe were to be opened on March 19 in the London offices of the Iraq Petroleum Company, and specifications call for delivery commencing June 15, next, at a rate of 16,000 long tons per month.

The line will be buried for its entire length. It is, as stated, of 12¾ in. outside diameter, 0.330 in. thick and will have a weight of 43.773 lb. per foot, manufactured in lengths averaging 36 ft. with 40 ft. maximum. It will be welded,—probably electrically,—so the pipes will have a long bell at both ends with 45 deg. bevel for welding, the sleeve not to be less than 5 to 8 inches. It is to be grade B seamless in accordance with the National Tube Company's blueprint 1485X dated January 8, 1930 A.P.I. There are two alternatives, namely: lap weld and electric welded pipe. Specifications of grade B seamless steel tube are as follows:

Chemical Properties Maximums

Manganese	0.35–1.50 percent
Phosphorus	0.04 percent
Sulphur	0.06 percent
Low carbon steel	

Physical Properties

Tensile strength D' 70,000 lb.
Yield point lbs. per sq. inch 40,000
Elongation 2 in. 25 percent

The order for 63 temporary sectional steel buildings was placed with Redpath, Browne and Company, Ltd., a British concern. These buildings are to be used for offices, warehouses, hospitals and living quarters at Haifa, Tripoli, Fatha, Haditha, Homs and Mafrak.

Recently specifications were issued for telephone and telegraph equipment covering four lines, totalling 4,080 miles. There will be one principal operating station at Haditha and three terminal stations at Hasar, Tripoli and Haifa, with ten or eleven intermediate stations at the Diesel pumping plants. The equipment consists of one intercommunicating telephone and one intercommunicating telegraph line of selective ringing type, giving intercommunication between stations. There will be one through telephone and one through telegraph line, making four lines altogether. The poles are to be steel tubular type with heavy cast-iron bases and with wooden cross-arms having steel spindles and glass or porcelain insulators. The wire is to be cadmium copper and to weigh 300 lb. per mile.

Soviet Activity in China's Oil Market

Resumption of Efforts at Penetration Seen in Negotiations With Wha Yu. Bulk Oil Terminal Being Established near Vladivostok. Black Sea Shipments.

THAT the Chinese market may become a battleground for international petroleum interests is a possibility suggested by recent developments, and particularly by the reported resumption of negotiations for the distribution of Soviet products by an important Chinese financial organization. Early in 1931 attention was directed to a reported project for the extension of the Soviet oil trade in China. At that time it was stated that extensive marketing plans had been formulated by P. A. Libanoff, the Soyouzneft trade representative in China.

That the undertaking was not pushed was attributed by some trade observers to the unwillingness of the Moscow authorities to disturb friendly trade relations with Standard Oil of New York which involved large purchases of Russian oil at good prices and possibly also because of British trade connections. It was announced also by the Chinese Minister of Industries that the dumping of Russian kerosene in China would not be permissible as there existed no diplomatic or commercial relations between the two countries.

For a time the threat of Soviet invasion passed, and the Chinese petroleum market remained as before in the hands of the following companies:

Company	Percent
Mei Foo (New York Standard)	50
Asiatic Petroleum (Shell)	25
The Texas Company	18
Independent Chinese concerns	7
	100

About 70 percent of the total kerosene marketed by the foregoing companies is exported from the United States, some being bought from Californian refiners such as the Union Oil Company and Standard Oil Company of California.

Evidently the Soviet Oil authorities underwent a change of heart, as it was not long before a special representative was sent from Moscow to Harbin to meet officials of the Kwang Wha Petroleum Company of Shanghai, an organization which owns a number of storage, distributing and sales stations in China. A preliminary understanding was arrived at, and a shipment of 88,570 bbl. of kerosene was sent by the tanker NORVINN from Batum on the Black Sea, arriving at Shanghai on October 25, 1931, following a 34-day voyage. This was the first Russian bulk cargo to be landed in China since diplomatic relations between the two countries were severed in 1927. The kerosene was pumped into the Kwang Wha's tanks, and then distributed throughout 15 provinces in China in five-gallon cans. Up to this time Kwang Wha had purchased all its oil supplies from American refiners.

During the course of negotiations at Harbin certain political and financial complications arose, and the signing of a monthly supply contract was indefinitely postponed. The political obstacles are said to have been interposed by the Chinese Government at Nanking, which apparently could not see its way clear to allow the Soviets free activity throughout the country under the emblem of trade. Possibly political propaganda was feared. At any rate the intention evidently was to support the policy of H. H. Kung, Minister of Industries, expressed earlier in the year against the dumping of Russian oil in China.

The inability of the Soviets and the Kwang Wha to agree on the financial phases of the proposed agreement resulted from the guarantee for full execution of the contract required by the Chinese merchant company, which maintained that a deposit of substantial security by the Russians was justified by the heavy commitments to which they, the Chinese, would be obligated. The Soviet representative offered a guarantee from the Dalbank, the Russian financial organization in the Far East, but the Kwang Wha politely but firmly refused.

The Russians, however, evidently do not intend to abandon attempts to enter the Far Eastern market, as their Pacific Coast refineries at Vladivostok and Khabarovsk will probably be completed in a year or less, and an outlet is needed for their Sakhalin crude apart from the need for money to carry on the five-year plans. With crude from Sakhalin, and gasoline, kerosene and fuel oil from these nearby refineries, they will be in a better strategic position than any American or European company; but at the present time the long haul from the Black Sea involves heavy transportation charges, even in these days of low freight rates.

At Pervaya, Retchka Bay, near Vladivostok, on the Pacific Coast, the old bulk oil station is being rebuilt, enlarged and transformed into a big terminal to handle Russian oil from the Black Sea for reshipment to the Far Eastern markets, and later to handle products of the two nearby refineries. Meanwhile, two Russian-built tankers are being assigned to the terminal.

Negotiations have recently been started with the Wha Yu of Shanghai to handle Soviet oil distribution and sales in China. It is interesting to note that the Wha Yu is an influential financial organization, but without any oil trade ramifications in the country.

Petroleum Products Imported Into China by Countries of Origin

	Gasoline (barrels)			Kerosene (barrels)			Lubeoil (barrels)			Fuel Oil (barrels)		
	1930	1929	1928	1930	1929	1928	1930	1929	1928	1930	1929	1928
United States	320,100	304,271	205,592	3,005,200	4,001,453	4,849,725	243,150	243,457	233,470	545,800	709,969	907,024
Russia	8,900	9,727	12,120	61,630	27,368	62,050	14,150	2,022	12,794	.....	.....	.....
Dutch East Indies	173,000	9,482	159,229	641,800	967,001	394,582	19,760	26,588	13,872	217,035	160,394	207,758
Hong Kong	74,350	72,715	47,469	630,500	687,276	817,094	28,200	30,673	27,614	219,750	219,201	162,114
Straits Settlements	46,750	119,138	49,247	90,400	93,378	37,495	2,000	1,714	469	260,050	368,627	399,280
All other	8,360	265,876	5,603	613,580	100,984	106,027	6,160	27,134	116,777	29,953	39,616	20,744
Total	711,460	684,318	479,260	4,443,110	5,877,460	6,266,977	313,276	331,588	304,995	1,272,588	1,497,807	1,696,920

When the NORVINN'S kerosene shipment reached Shanghai, Mr. Libanoff made the following statement:

"The coming of Soyouzneft into China signals the appearance in the market of an entirely independent concern. The world trusts will have to put up with this fact and take it into consideration in their future activities. The activities of the Soyouzneft in the Chinese market will be guided just as they are in the markets of all other countries of the world, by sound commercial principles and by such customs of the trade as already exist in this particular market, i.e. its appearance will not be met by the world oil trusts with a price fight. Indeed I fail to see any sense in such a fight, even if it takes place, as evidently none of the trusts have any doubt of the ultimate fruitlessness of such a measure. They know well enough that this could not force Soyouzneft out from the market. Soyouzneft is sufficiently strong to withstand any such attempt and will not withdraw from the Chinese market."

This announcement leaves nothing to the imagination and defines the Soviet belief that they are entitled to a share in the market, and that the Soyouzneft will leave no stone unturned until they get it regardless of any price war. Apparently it does not take into consideration that taking this step involves competition with their own kerosene customers who, while not actually distributing Soviet oil in China, are nevertheless maintaining large purchases of Russian oil products in markets to which Russia's geographical location gives convenient access.

Oil Companies Trading in China

Company	Address	Nationality
tandard Oil Company of New York	11, Canton Road, Shanghai	American
ecuum Oil Company	2, Canton Road, Shanghai	American
he Texas Company (China) Ltd.	1, Foochow Road, Shanghai	American
siatic Petroleum Company	1, The Bund, Shanghai	British-Dutch
Mitsui Bishi Shoje Kaisha Ltd.	9, Canton Road, Shanghai	Japanese
hina Petroleum Company	3, Museum Road, Shanghai	Chinese
wang Wha Company	3, Museum Road, Shanghai	Chinese
nited Petroleum Trust of U.S.S.R. (Soyouzneft)	2, Canton Road, Shanghai	Russian

Although diplomatic relations between China and the Soviets have not been resumed since the 1927 break, Soviet trading organizations of late have been active in China. Shanghai is the seat of the trade representative of the Soviets under whose auspices the following offices have been opened during the past year or two:

(1) Centrosoyus,—General Trading Organization
(2) Textile Syndicate (Main offices at Harbin)
(3) Gosmedtorgprom,—Medical and Sanitary Preparations Trust
(4) Gosfilm,—Motion Picture Syndicate
(5) Sovtorgflot,—Soviet Shipping Board (Attached to the offices of the Far Eastern Railroad)
(6) Dalles,—Soviet Timber Trust
(7) Gosprit,—Alcohol and Beverage Syndicate
(8) Soyouzneft,—known in China under "United Petroleum Trust of USSR" (Main offices were opened at Shanghai early in 1931 with agencies in Tientsin, Tsingtaw, Hankow and Canton)
(9) Torgpredstwo—General Trade Offices (Originally for trade in coal)

Apart from these trade organizations there are also bureaus of information and intelligence such as Comintern (Communist International), Tass and Angasha, and the branch offices of "Dalbank," which is the financial institution of the Soviets in the Far East.

While these trade organizations are directing their efforts to sell in China all kinds of goods such as timber, textiles, motion pictures, articles of Russian art and low cost jewelry, particular efforts are being made to open the Far Eastern markets to the flow of Russian oil.

The Chinese market has shown considerable decline during the past few years, and last year was the lowest in four years. Additional competition, particularly of a price cutting nature, is not welcome to the organizations now handling the trade, and the Soviet press in Moscow has recently intimated that price cutting will be adopted in the Orient if necessary. It must not be forgotten that one American company has been building up its trade and good will in China since 1870. In the earlier days enormous investments were made, and it is now well entrenched. Up to 1890 all kerosene shipped into China came from the United States. Until the tanker NORVINN'S cargo arrived Russia's sales of petroleum products were comparatively insignificant, and consisted of case goods.

The accompanying table gives a complete list of companies at present engaged in the Chinese petroleum trade:

Petroleum Imports Into China by Product

	1931* (Barrels)	1930 (Barrels)	1929 (Barrels)	1928 (Barrels)
Gasoline	715,000	711,460	684,318	479,260
Kerosene	3,950,000	4,443,110	5,877,460	6,266,977
Lubricating Oil	245,000	313,276	331,588	304,995
Fuel Oil	1,530,000	1,272,588	1,497,807	1,696,920
Total	6,440,000	6,740,434	8,391,173	8,748,152

* Provisional figures.

▼

Soviet Marketing Position

(Continued from page 143)

position in regard to the flooding of international markets with Soviet oil. The reply to the inquiry is published on page 143. It constitutes the first official expression of the Soviet position regarding an international conference and a possible international agreement for regulation.

In this statement Chairman Riabovol makes clear the Soviet position on several points that are of intense interest to members of the petroleum industry. He indicates that one of the main reasons behind the effort to expand Russian production is the necessity of meeting the petroleum requirements imposed by the growing demands of Russia's industrial expansion and in support of this position he directs attention to the fact that while Russian output increased 8,200,000 tons between 1929 and 1931 exports were enlarged only to the extent of 1,500,000 tons. In the reference to the impracticability of ignoring the Soviet industry in any consideration of plans for the regulation of the petroleum trade there appears to be a warning that Russia cannot be overlooked as an international factor.

The most significant and important part of the statement however is the declaration that the Soviet oil exporters never have refused and do not now refuse to participate in an international conference or to join in working out measures of regulation for the industry. Willingness to join in such a discussion naturally implies a willingness to abide by any mutually satisfactory agreement that may be arrived at.

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Filling Soviet Containers with petroleum products.

President Sinclair Discusses Marketing

Demoralization of Petroleum Marketing Resulting from Over-competition Ushered in Era of Indiscriminate Credit to Retail Trade and Multiplication of Outlets.

In an address delivered March 8 at Princeton University, in the Cyrus Fogg Brackett Lectureship in Applied Engineering and Technology, E. W. Sinclair, President of the Sinclair Refining Company, discussed the subject of Petroleum Marketing. Tracing the development of the oil industry from its earliest days he outlined the spread of retail service stations that accompanied the expansion in the use of motor vehicles.

"Prior to the World War," said Mr. Sinclair, "when the automobile was in its infancy, the oil business was in a few strong hands. Although many smaller aggressive concerns had commenced to assert themselves, there was no definite or general challenge to the acknowledged and recognized supremacy and dominance of the Standard Oil groups. Gasoline was distributed from the refineries to dealers and consumers in barrel shipments and from the refineries to bulk distributing stations, located at strategic points, from which deliveries were made by barrel and by tank-wagon to dealers and consumers. The price structure was comparatively simple, being built on the refinery costs (which allowed for manufacturing profit), plus transportation costs, plus handling and delivery costs, plus profit. The handling of the product in bulk, balance between refinery production and consumption, and small competition made for price stability and satisfactory profits."

After describing the rapid growth of crude oil production during and following the World War and the demoralization in the marketing end of the business that resulted from overproduction and over-competition Mr. Sinclair said:

"Gasoline had to be dumped into the market and sold at the best price obtainable in the open market. The spot tank-car price now took the center of the stage. Enforced liquidation and desperation brought quantities of gasoline into the market to sell at unbelievably low prices. Many jobbers under contract, seeing this fruitful opportunity for increased profit by buying in the spot market, ignored commitments of their marginal contracts and commenced to buy in the open market. The pressure became so great that Mid-continent refiners finally, in order to preserve their jobber contacts, gave their jobbers the alternative of buying under a fixed guaranteed margin of protection or of buying at spot tank-car prices. The jobber had come into his own and the refiner found himself in a position of utter chaos, carrying upon his back a staggering load, at the mercy of a distressed market and yet virtually underwriting the prosperity of the jobber through the guaranteed margin.

"The state of affairs we have just pictured ushered in an era of the most profligate waste and extravagance in marketing. Violent and unleashed competition for retail distribution was the order of the day. . . .

"Over-extension of facilities was accompanied by a development of wasteful and costly practices which have fastened themselves on the industry to the point where they have been almost accepted and recognized as necessary under existing conditions.

"In order to induce jobbers to enter the business and in order to permit the expansion of facilities by jobbers already in the business, large and frequently unsound and unwarranted credit extension was offered. In order to promote dealer outlets, inducements of various kinds were offered, such as the furnishing of gasoline and oil dispensing equipment, and such indirectly related equipment as air compressors, greasing facilities, etc., gratuitous improvements in the way of pump islands, canopies, driveways, etc., loans of money for the building, alteration and modernization of service stations, and unwarranted extension of credit for merchandise purchases.

"In retail marketing the most vicious and detrimental practices which the keen and desperate competition ushered in were:

"Preferential prices and so-called commercial discounts in order to attract volume business;

"Costly and unremunerative 'extra services';

"'Free' offerings of merchandise;

"Indiscriminate credit extension to retail trade. . . .

"It may be said to the credit of the industry that the purchasing public has not been saddled with the costs attendant upon the waste and extravagance which have existed within the industry itself. Prices have been consistently low and frequently below the actual cost of the product with consequent terrific loss to the industry. The public interest, however, is affected because millions of dollars of capital invested by the public in the oil industry have been dissipated to a greater or lesser extend by the costly and wasteful over-extension of facilities and the extravagant practices within the industry. Whether times are good or bad, the oil industry cannot support the present structure which it is now sustaining. Duplications and over-extensions of market facilities which have no economic place in the scheme of oil marketing must be eliminated. These outlets which have no economic right to exist or survive are being maintained in existence through forms of subsidy of one character or another. Company-owned stations are kept open in the face of low volume and staggering costs, and dealer and jobber outlets are being 'wet-nursed' through excessive margins. Good business management dictates that stations which cannot be profitably operated when good merchandising methods are applied should be closed. Jobber and dealer outlets which are maintained by excessively high guaranteed margins must be placed on their own feet and upon their own responsibility. . . .

"The price structure of the industry is going through a period of transition. Faced with the certainty of ultimate disaster, if the present extravagant and wasteful practices are continued, and driven by desperation because of the present economic distress within and without the industry, there is a definite trend toward more conservative operation in the marketing end of the oil business. While new outlets are being added, there is more care and discrimination in their selection. There is a tendency to reduce extravagant costs of operation through drastic retrenchment and economy in operation. Dealers' and jobbers' margins are undergoing revision. Some of these efforts which are being carried on through the individual initiative of the marketers may prove abortive because there is no unanimity of action and no general cohesiveness within the industry to insure the ultimate success of such an undertaking. What is being done, however, is proof conclusive that the industry has awakened and is beginning to face with more courage than has been exhibited in the past the problems which confront it and is making a well-intentioned, if at times misdirected, effort to correct its own problems. The past two years ushered in this most recent phase of the evolution of the marketing structure in the oil business and upon the success of the present efforts depends in a large measure the ultimate prosperity of the industry."

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British Oil Tariff Question

Answering a question in the House of Commons late in February, Major Elliot, the Financial Secretary of the British Treasury, stated in writing that as hydrocarbon oils are goods chargeable with an existing duty on customs, they will not be affected by the proposals in the Imports Duties Bill.

"This assurance appears to be satisfactory even to some of the American oil companies; nevertheless, it is sheer bunkum," states a London correspondent, "Neither Major Elliot nor any other member of the House of Commons has any control whatsoever. The advisory committee have power to vary the general principles of the new act in any manner they consider desirable and Parliament has no say in the matter. A Treasury order is all that is required, and the matter is now outside Parliamentary jurisdiction."

New Menace to British Petrol Sales

Remarkable Service Results Obtained with Use of Fuel Oil by London General Omnibus Company. Fuel Economies Effected—Government Tax of 8 d. per Gallon Avoided.

THERE has been remarkable progress made during the past three years with the high-speed, light-weight Diesel engine for aircraft, rail cars, trucks, busses, tractors and boats. No doubt further developments and wider commercial adoption will result in countries without domestic crude supplies, especially as such countries usually have the highest motor fuel taxes. The latter is the case with Great Britain where the tax on petrol is eight-pence, or 16 U. S. cents at par exchange.

Among large commercial users of motor fuel who have turned serious attention to the Diesel engine is the London General Omnibus Company, Ltd., who commenced service tests in January, 1931, with 12 busses so equipped. These were followed by an order for a further 20, and up to the beginning of this year the aggregate mileage on the streets of London was about 540,000 miles. As this company operates over 4,000 busses, replacement of petrol engines with Diesels burning a light fuel oil will make an appreciable difference in the quantity of petrol consumed in Great Britain. Should the adoption be extended to all classes of commercial vehicles in the United Kingdom, work of 600,000,000 Imperial gallons of petrol would be done by about 375,000,000 gallons of fuel oil, and would mean a loss in tax revenue to the British Government of £20,000,000. To tax fuel oil and produce a commensurate sum the tax would have to be 1s3¼d per Imperial gallon. Such a proposal might easily produce political complications.

The London General Omnibus Company now purchases nearly 60,000,000 gallons of petrol per year at approximately 11d per gallon, of which 8d represents tax.

Originally their Diesel busses, which are A. E. C.-Renown type of three-axle construction, double-decked, carrying 56 passengers, were fitted with A. E. C. Acro oil engines; but the latter were replaced with engines of a new design based on the principle of the Ricardo rotational swirl. Each has six, 115 mm. bore by 142 mm. stroke cylinders (8.36 litres) developing 130 b. h.p. at 2,400 r. p. m. At full load the minimum fuel consumption is 0.40 Imperial pint per b. h.p. hour, falling below this figure at partial loads. The maximum mean effective pressure is 103 lb. per sq. in.

Fully loaded each vehicle weighs 11.9 tons, and the average fuel consumption in regular service is 7.8 miles per gallon, or approximately 60 percent better than the "miles-per-gallon" record of corresponding petrol-engined busses. The total saving in cost of operation amounts to approximately 66 percent. On account of the increased power available, and the higher tractive effort at low engine speeds, the Diesel busses are very popular with the Company's drivers, especially as they can easily maintain schedules in service.

Specification of Fuel At Present Used for L.G.O. Busses

Specific gravity @ 15.5 degs. C.	Approx. 0.850
Closed flash point	Not below 185 deg. F.
Viscosity (Redwood) @ 100 deg. F.	33–35 secs.
Cold test—(A.S.T.M. pour point)	Below 0 deg. F.
Water	Nil.
Adventitious matter	Not above 0.03 percent
Ash content (inherent)	Not above 0.005 percent
Sulphur content*	Approx. 0.6 percent
Calorific value (gross)	Approx. 19,700 B.T.U.
Company supplying fuel	Shell

* It is hoped eventually to be able to have sulphur content reduced to below 0.5 percent.

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Scene on the property of the Anglo-Persian Oil Company in Persia.

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Buy British

THE city of Derby, England, has had "Buy British" stamped on all its envelopes and then contracted with the R.O.P. for Soviet petrol for one-half of the supplies needed by Midland Association of Municipal Tramways for 10⅛d. per Imperial gallon. Answering criticism, alderman W. H. Salisbury replied: "Where am I going to buy British petrol?" One alderman said—"Power petrol is British!" Power petrol is cracked in England from Russian kerosene by the Medway Oil and Storage Company, which is controlled by the Anglo-American Oil Company, and the Royal Dutch-Shell and Anglo-Persian groups. But, it is rumored that after April 1, when the contract with the Soviets expires, Medway will no longer import Russian oil.

British Union Oil Company's producing property in Barbados, B.W.I.

Commercial Oil Possibilities of Barbados

Small Production from Two Fields Over 35 Year Period. One Well Said to Have Given in 10 Years 30,000 bbl. of Crude Possessing High Lubricant Qualities.

ALTHOUGH covering a world-wide area the British Empire surprisingly contains but few discovered oil resources with the result that petroleum purchases form a steady drain on her national wealth. Great Britain is the second largest consumer of petroleum products, while Trinidad is the biggest oil producer of her dominions and its output is steadily increasing; British India with a slowly decreasing flow comes next, then Sarawak and Canada. The aggregate production, however, forms only two-and-one-half percent of the world's supply. Other British possessions have as yet shown commercially insignificant outputs, including the little island of Barbados farthest to the East of the Windward Island group in the Caribbean. This colony was settled by the British in 1625 and now has a population, mostly black, of about 160,000 people.

Production of sugar, a small crop of cotton, and fishing practically have been the extent of Barbados's industrial activity; but the production of Barbados Manjak (black mineral bitumen), and the bituminous tar sand workings, hold hope for the near future when their importance is better appreciated. Local residents are anxious that the native petroleum resources, worked in a small way for 35 years, should soon be further developed because of the high quality of the oil produced and its excellent lubricating properties. Furthermore, any refined petroleum products exported to Great Britain will not be subjected to the new ten percent import tariff should it later be imposed by order of the Treasury.

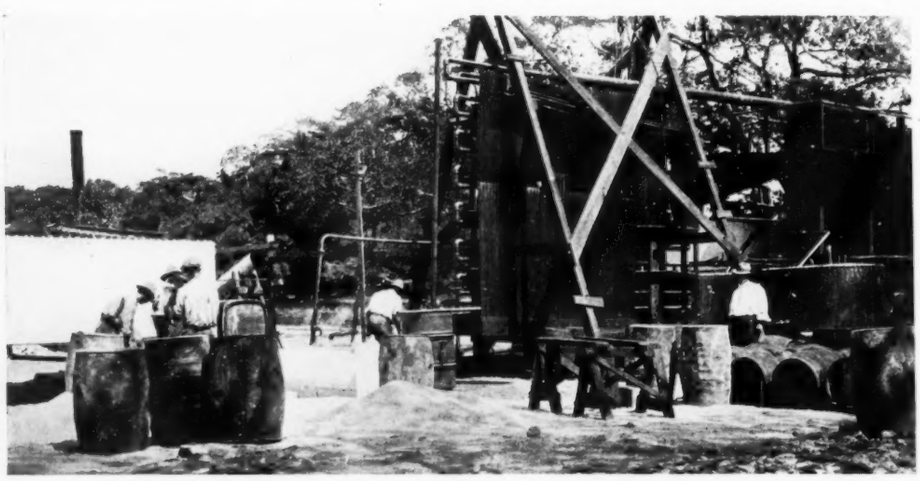
According to R. H. Emtage, producer and exporter of Barbados Manjak, Barbados as an oil producer is never likely to compare in importance with Trinidad. Nevertheless, he considers that it has its importance for the following reasons:

(1) High grade quality of crude.
(2) Long life of wells.
(3) Cheap labor and good water supply.
(4) Accessibility of fields.
(5) Proximity to Trinidad, facilitating management and transport.
(6) Healthy living conditions.

Reliable information as to the exact crude output is not available, although the chief geologist of an important American oil company gives this as about 200 bbl. per day. The best well as to quality and quantity was brought in at 1,600 ft. nearly 10 years ago with an initial flow of 300 bbl. per day. During the intervening period it has produced over 30,000 bbl. and last year was producing 180 to 200 bbl. per month when steadily baled at 1,400 ft. according to local information.

Quality, not quantity, lends portance to Barbados crude

Small topping plant—industrial aspect of Barbados.



In addition to domestic production, Barbados imports approximately 30,000 bbl. of petroleum products annually of which 23,000 bbl. are motor fuel and 1,000 bbl. are lubricating oils.

With the exception of one well at 4,000 ft. no deep drilling has been attempted. This well pierced a five foot oil sand at 1,800 ft. and thinner sands at lower depths. Four wells were drilled to about 3,300 ft. and one brought in a small quantity of crude having a high-grade lube oil content.

L. C. Burt, now president of The Burt

Barrels of crude awaiting shipment, Barbados, B. W. I.

Corporation, Tulsa, Okla., was the driller on this particular well and drilled through the five-foot sand. Owing to the fact that Hen-skin casing was being used, and that formation shut-offs were entirely depended upon, it was suicide to attempt a test, and useless to do so with the equipment at his disposal.

The only way that oil can be produced commercially with profit in Barbados, says Mr. Burt, is for a well-financed organization to send a competent man and give him full authority and sufficient funds, and not have interference from New York or London. Barbados is ideal rotary drilling country and, given an adequate supply of water to mix the mud, one could make 100 ft. a tour. The company operating in Barbados was burdened by cable tool equipment that was obsolete before it was shipped to the island. However, the income derivable from Barbados oil is hardly likely to justify an elaborate organization with high overhead.

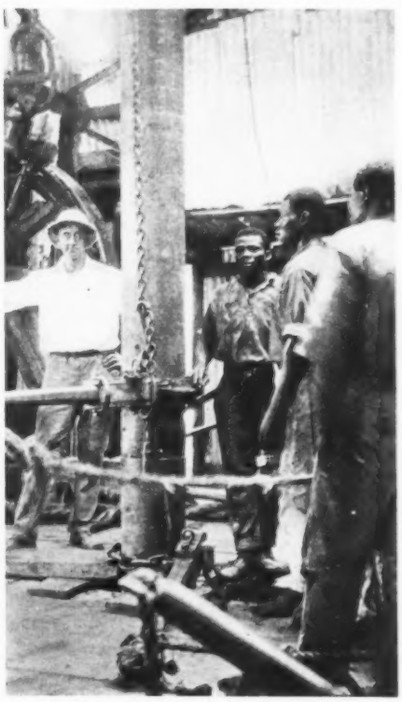
The British Union Oil Company, whose operations of about 10 years ago are illustrated, has made but few further attempts to develop its area, and, says Mr. Emtage, have not drilled below 1,800 ft. There are about 30 wells and over 90 percent of these have shown some production. All have had long life with good gas pressure. In the Hopefield district, well No. 2, which was 1,000 ft. from No. 1, ran into the same gas strata at 800 ft. depth as encountered in No. 1 at 1,835 ft.

Geo. H. Willock, a British petroleum technologist who is interested, quotes the following specifications of Barbados crude, the variations covering different parts of the island.

Barbados Crude Specifications

Specific gravity	9.874-0.934
Percent at 190 deg. C.	10
Percent at 190-260 deg. C	12
Percent at 260-300 deg. C.	18
Residue, percent	59
Sulphur, percent	0.9

It is interesting to note that during the seventies of last century, the pioneer days of the field, small quantities of non-freezing lubricating oil were produced from hand-drilled wells under 100 ft. depth and shipped to Russia for use on the Government railroads. The particular area is not controlled by the company at present operating in Barbados; in fact, it has never been seriously prospected, although it was visited 13 years ago by Chester Clark, then vice-president of the Sinclair Oil Company, together with Mr. Emtage. Modern portable equipment very probably could handle this deposit with profitable results.



Inserting casing joint with old style tongs in Barbados. L. C. Burt, driller, in background.

Some of the Barbados crude is exported to the United States for special lubricant manufacture, but the greater part is used by the local gasworks for enriching and for solvents. If the Barbados Government follows the example of many other countries and imposes a very high tariff on imported gasoline and crude it is possible that outside or local capital will find it well worth while to develop actively the country's crude resources. At present the world has little use for additional supplies of oil; but if the people of Barbados have patience the limited supply of their island may have real financial value.

The Barbados Manjak workings have been carried to a maximum depth of 330 ft. Owing to its high lustre elasticity, low melting point, electrical resistant properties, and intense black streak, Barbados Manjak had a market in the United States and in Germany prior to the world war.

The bituminous tar sands of Barbados comprise an extensive area found in the Spa Cane garden area. The oil content varies between 8 and 18 percent; specific gravity is 0.938 at 15.5 deg. C.; 4 percent distils below 300 deg. C. Viscosity at 122 deg. F. (Saybolt and Furol) is 1.245 secs. Barbados Manjak should prove a good crude material for (1) bitumen and asphalt emulsions for road-making, (2) an enricher for low grade asphalts, (3) stock for cracking and hydrogenation processes, (4) as a Ranney oil mining proposition. Roads built in experiments conducted in Barbados with local tar sand laid 1 ton per 25 sq. yards according to specification furnished by Bureau of Physical Standards, London, cost £420 per mile for bituminous binder and are wearing as well as contiguous work laid down at the same time with imported material on penetration system, two gallons and a half at 34 cents per square yard, or £1,750 per mile.

The tar sand deposits are tilted at an angle of 45–60 degrees from the horizontal. Most of the island having a coral cap, geology is out of the question.

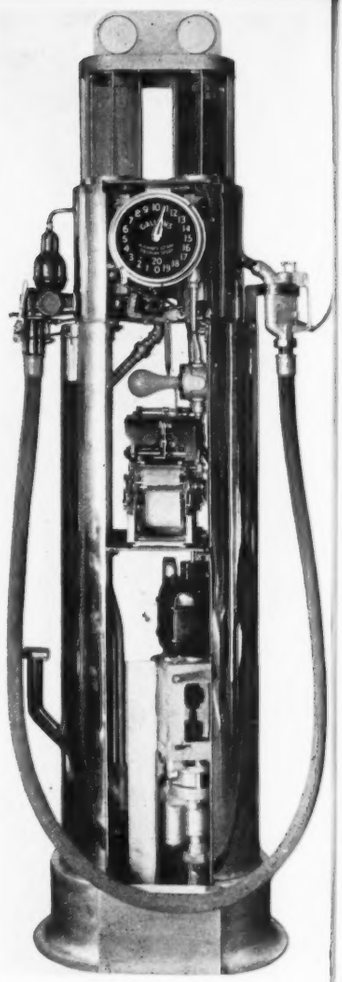
Sugar and oil on the Haynes plantation, Barbados

In design the Davis dispensameter resembles an American skyscraper.

A Robot for the Service Station

Accurate, Automatic Sales Record Encourages Confidence in the Customer and Protects the Oil Company and Retailer.

By W. M. Carroll
The Davis Welding and Manufacturing Company, Cincinnati, Ohio



The cash and gasoline recording, and the customer's receipt, mechanism

PROGRESSIVE officials of the oil industry have been aroused to the necessity of giving more study to the problem of retail merchandising of their products than they have heretofore. While the last decade has witnessed a marked development in the methods of production, refining and wholesale distribution, the marketing side of the business has, to a great extent, been allowed to care for itself as best it could. This condition is readily understood when we consider that marketing needed little expert attention as long as the demand for motor fuel continued a step in advance of the oil companies' ability to supply it conveniently.

The mad scramble for desirable locations and the attending absorption of numerous independents has resulted in a surplus of service stations; has tied up a tremendous capital in valuable land and buildings, thus creating a condition which finds the oil industry today with a profit yield so small as to be entirely inadequate in view of the possible gallonage obtainable. The advent of the price-cutting independent into the retail field has aggravated the situation and reduced one of our greatest national retail industries to a basis of mere price competition, with the odds in favor of the unscrupulous gasoline retailer.

It would be folly for us to attempt to offer a panacea for all the ills of the marketing division of the industry. There are too many contributing factors over which we have no control, and only time and painstaking study on the part of marketing officials will produce the desired results. It might not be amiss, however, to indulge in a simple analysis of a few well-known facts of retail merchandising and draw a conclusion which might be helpful in the premises.

There are two bases of competition in the retail merchandising field; the one is the basis of price, and the other is the basis of quality and service. The former ceased to be a universal basis of competition, in the retail industry generally, many years ago. The introduction of the department store, of large scale production, the establishment of "standard brands", and the influence of national advertising, all contributed to raise retail marketing from the status of mere price competition, to one based upon quality and service. Added to this was an appeal for custom based upon some new form of service to the public or some new idea in merchandising which the public appreciated and to which it quickly responded.

All these elementary facts are well known to the marketing officials of the oil industry and their lessons have been diligently applied in an effort to increase their volume. In spite of this, the old price basis of competition still prevails.

Example of receipt issued by the gasoline service station robot.

The Davis Herald Co. Cincinnati, Ohio	COURTESY SERVICE STATION 529 N. Main Street DAYTON, O. You have purchased BENZOL GAS	PAY PRINTED AMOUNT WHICH HAS BEEN MECHANICALLY TOTALED	Reg. No. 101
DATE	GALS.	PRICE	AMOUNT	NO.
A SEP 22	8	23	$1. 8 4	8 9 8

High quality of merchandise and a most willing policy of efficient service seem insufficient to cause a differentiation in the public mind between the merits of nameless motor fuel of low price and questionable quality and nationally known standards of excellence backed by oil companies of established reputation and standing.

Now, it is generally conceded by students of merchandising that every marketing campaign must have its "big appeal". Acting upon this accepted theory, the oil industry has put forth both quality and service as their "big appeals". The public mind has been educated to both these fundamental appeals at a considerable cost to the oil companies, yet it is evident that they are insufficient in themselves to eliminate the existing undesirable price competition.

What then is the "big appeal" which the oil industry must add to its present marketing methods to place its retail business on a modern and accepted basis of competition? We venture to say that that appeal must be a carefully studied appeal for the confidence of the customer. That a lack of confidence on the part of

the customer does exist is generally conceded. He is distrustful of the station attendant, he is even distrustful of the oil company. He doubts the accuracy of gasoline dispensing equipment and questions the attendant's conscientious use of that equipment. He is not sure that the total amount of his transaction is properly computed and he wonders if the attendant is perfectly honest in making his settlements with the oil company, and vice versa.

Now, of course, you have confidence in the honesty of the receiving teller at your bank, because, when you leave a deposit with him, he either enters the amount in your passbook, or he gives you a duplicate deposit slip. Your confidence in your bank and bank employees is born of a knowledge that a detailed record is made of your deposit, and that methods of record and control are used which safeguard your property and remove from employees the opportunity for dishonesty. This same distrust of which the service station customer is a victim does not prevail when he is making purchases of goods in other retail stores. This is because most goods are sold either in packages or such definite increments, that the purchaser can, with the assistance of the cash register indication or a sales slip, easily relate in his mind both quantity of goods and price of goods to his perfect satisfaction. He also knows that the merchant uses methods of inventory and cash control which equally protect the three parties to the transaction, the customer, the clerk and the merchant.

It should be possible to go a step further in relating goods and price in gasoline retailing than in other lines of merchandising because there is but one major commodity to be considered. The answer to all this seems to be the use of dispensing equipment which will combine both the function of accurate measurement and that of automatic and infallible record into a single mechanism which is reasonable proof against willful manipulation. This would be an assurance to the customer of correct quantity and price mechanically related so as to afford that essential triangle of protection to customer, attendant and oil company.

That this method of mechanical control of both merchandise and cash is thoroughly practical from an engineering standpoint is evidenced by the equipment illustrated in connection with this article. It is a combination of a previously tried and accepted system of measured dispensing and the special adaptation of a well known make of registering device, so related as to produce a novel result, that of automatic balance of merchandise output with cash income. The automatic receipt is the oil company's label for its product and is its guarantee of correct quality, quantity and price. The automatic record strip which is preserved within the column of the dispenser is a detailed report of each transaction with totals of gallons and money for any given period. The attendant's character identification, which is printed at the extreme left of the transaction, establishes an individual responsibility of every gallon of gasoline dispensed and for every cent of money collected.

Individual total counters showing the number of gallons dispensed by each attendant are likewise provided. These features are controlled by an attendant's identification key and the entire equipment is rendered inoperable unless this key is inserted. This equipment provides a price range per gallon of one cent to ninety-nine cents, and also provides for tenths of a cent prices from one tenth to nine tenths of a cent. When tenths of a cent prices are used the transaction total is automatically computed in the next highest cents denomination, as is the custom. The total counter will show a total of the actual cash received, thus eliminating the variable between gallons sold and cash received when gas is priced at tenths of a cent.

The idea of intimately relating the functions of measurement and recording in gasoline dispensing equipment is not entirely new; but the product illustrated is the first that we know of to be presented to the trade which combines these complete features so as to produce an automatic result. It is natural that oil companies look with favor upon equipment which will produce these valuable control results within reasonable price limits. Established manufacturers of dispensing equipment have, at least in two instances in the past, developed a register mechanism attached and coordinated with gasoline dispensing equipment. While mechanically both of these registers were at least partially successful, their ultimate failure to come into general use may be attributed to lack of an adequate service organization and to the fact that they were somewhat in advance of general marketing practice at the time they were introduced.

The new recording dispensameter illustrated herewith is designed to have an advantage over any previous attempt of earlier equipment offered in that the register is coordinated with what is in effect a super-accurate hydraulic meter measuring in increments of exactly one gallon, with actuating means to operate the register.

This type of dispenser from which the register is actuated is in general in successful use throughout the world, except the United States and Canada, and its type is specified by law in a number of European countries. It is the only type permissible in some countries where gasoline is sold at a comparatively high price.

The recording dispensameter unit also has an obvious advantage from a practical operating standpoint; that is, that a mo-

The robot's recording mechanism. The amount is mechanically totalled.

A permanent record of sales is made by the dispensameter.

					0 0 0	0	0 0.	0	0				
					1 1 8	0	2 7.	1	4				
A	SEP	22		5	2 3	$	1.	1	5	9	1	0	101
C	SEP	22	2	0	2 3	$	4.	6	0	9	0	9	101
A	SEP	22		6	2 3	$	1.	3	8	9	0	8	101
B	SEP	22		5	2 3	$	1.	1	5	9	0	7	101
E	SEP	22	1	8	2 3	$	4.	1	4	9	0	6	101
C	SEP	22		3	2 3	$	0.	6	9	9	0	5	101
C	SEP	22		1	2 3	$	0.	2	3	9	0	4	101
B	SEP	22		5	2 3	$	1.	1	5	9	0	3	101
A	SEP	22		6	2 3	$	1.	3	8	9	0	2	101
A	SEP	22	1	2	2 3	$	2.	7	6	9	0	1	101
E	SEP	22		4	2 3	$	0.	9	2	9	0	0	101
B	SEP	22	1	0	2 3	$	2.	3	0	8	9	9	101
A	SEP	22		8	2 3	$	1.	8	4	8	9	8	101
C	SEP	22		3	2 3	$	0.	6	9	8	9	7	101
E	SEP	22		7	2 3	$	1.	6	1	8	9	6	101
A	SEP	22		5	2 3	$	1.	1	5	8	9	5	101
					0 0 0	0	0 0.	0	0				

Early model Davis Dispensameter in actual service. Extensive tests were made with this model.

tive force of considerable power is available with the delivery of each gallon of gasoline without throwing a strain on the measuring mechanism or affecting its accuracy. This motive impulse is transferred mechanically to a clutch operating on a shaft extending from the electric motor that drives the gasoline pump at the base of the dispensameter, extending upward and connected to the clutch, and then through a belt drive to the register. Thus the electric motor furnishes independent smooth reliable power for operating both the computing mechanism in the register and for printing the detail strip and for printing and registering the customer's ticket.

It seems logical to conclude that "customer confidence" is one of the missing elements in the present day program of gasoline marketing, and that it must be added to the appeal of quality and service in order to raise the retail industry above mere price competition. Doubtless the successful use of combined measuring and recording equipment by the oil industry would place in its hands a powerful instrument with which to re-establish and hold the confidence of their customers. It would serve as the basis for an advertising appeal of inestimable value. It should completely distinguish users in the public mind from those companies who do not use this confidence building method of control and protection.

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Soviet Oil Complicating German Market

REFUSAL on the part of the Soviets to keep up the prices set by the Association of Oil Importers in the face of decreasing consumption is giving rise to a serious situation in the German petroleum market where prices have been falling recently. The Association is said to be losing money rapidly as a result of the price situation with gasoline prices of 32 marks per 100 liters in Berlin and 31 marks per 100 liters in Hamburg.

The Soviets are in a strong position with the German Government required to help them as a result of the Government's action in guaranteeing payments for Soviet orders placed in Germany. It will be necessary for the Government to encourage imports of petroleum from Russia if the Soviets are expected to be in a position to pay for equipment purchased in Germany. While the Government is said to be willing to meet the Soviets half way, the latter have demanded the right to supply all army and navy petroleum requirements and the modification of certain customs and duties that hinder importation of petroleum into Germany from Russia.

▼

Cooperation in Research

"WE can pull much weight by joining wholeheartedly in the cooperative work which has so far been set on foot and by initiating further efforts," said Mr. J. A. Kewley, chief chemist to the Asiatic Petroleum Company and the Anglo-Saxon Petroleum Company, in his presidential address to the Institution of Petroleum Technologists in London last month.

Mr. Kewley stated that the need for cooperation in research was generally recognized, and pointed to the numerous standing committees of the American Petroleum Institute, and the cooperation of the American Society for Testing Materials and the Fuel Section of the Society of Automotive Engineers, as outstanding examples of joint research work.

Referring to the growing realization of the need for international planning by oil producers, Mr. Kewley said:

"I need only refer to the effort made by the Association of the Roumanian Petroleum Industrialists towards an international conference to discuss production, taking as a basis the scheme put forward by Mr. J. B. Aug. Kessler. However, cooperation on this basis in the U. S. A. appears to be illegal, as their anti-trust laws do not permit of any agreement involving restriction of production.

"It is certainly discouraging to see that in a country which has in many other directions given a lead in cooperation, the recent disastrous conditions in the oil-producing industry, which afforded an excellent opportunity of effective cooperation, merely proved that such could be effected only by illegal methods."

Tax Evasion Campaign Making Headway

Central Gasoline Tax Evasion Committee Formed at Chicago Meeting by Members of Fifteen State Committees—F. V. Martinek Permanent Chairman—Policy Decided.

EARLY this year a Cook County, Illinois, jury brought in a verdict of guilty in answer to a charge—the first conviction of its kind in any State in the United States—of violating the motor fuel tax law. Nine days later an inspired judge passed sentence of three years imprisonment and a fine of $3,000 on Abe Allen, best known of Chicago's gasoline bootleggers. The contrast between this speedy trial followed by prompt sentence and the ineffective trial ending in suspended sentence for the same law breakers last summer, was most agreeable to those who have interested themselves in putting down tax evasion in an effort to save the commercial life of law abiding motor fuel distributors.

Following this victory in the campaign against the racketeer in the marketing branch of the petroleum industry, representatives from gasoline tax evasion committees in 15 States met in Chicago on March 15 and organized a central gasoline tax evasion committee, Frank V. Martinek, permanent chairman.

The committee resolved to cooperate with State officials in uncovering cases of tax evasion and in bringing the guilty to trial. They adopted policies of protecting the motorist from adulterated motor fuel and other types of fraud that flourish where the practice of gasoline bootlegging is strongly entrenched; of opposing increases of State motor fuel taxes in order to decrease the attractive profits that encourage the bootleggers to form larger and more powerful organizations; and to oppose the diversion of gasoline tax funds from the purpose for which they were originally intended.

With the organization of this central committee to cooperate with and direct the efforts of the various State committees the campaign against the evasion of gasoline taxes is now in a position to oppose successfully the abuses that have been uncovered during the past six months.

Investigation—necessary prerequisite to launching the campaign in each State—has revealed to Regional and State committees organized during the past year to deal with this menace, the vast extent of this form of fraud and the astonishing profits derived from it. These investigations show that evasion of the motor fuel tax has become a major racket. Of late it has attracted some of the best brains of the illicit liquor business because of its comparative safety and huge profits. Until recently the lack of competition from other criminals engaged in the same business was an added inducement to enter this field.

Not all the difficulties confronting the committees arose from the tax evaders. In some instances dishonest, indifferent, and incapable State officials, antiquated State laws, variety in the amount of the tax and nature of the laws, and State legislatures apparently bent on making the way of the transgressor easy gave size and variety to the problems faced by the State committees.

Two aspects of the campaign are of present interest. The existing abuses, the huge profits, the national and even international extent of gasoline tax evasion are well known to every member of the industry in the United States who is interested in its welfare. Practically, what has been done and what remains to be done are the important questions now.

State committees have been organized in 45 of the States and the movement will be extended to the other three in the near future. Regional committees are enjoying the benefit of legal talent devoted to the problem of uniform tax laws for all the States. Efforts to hold the State taxes to rates that will make evasion less profitable have succeeded in some States, notably in Pennsylvania where some of the best work yet accomplished in organizing a motor fuel department has been done. Convictions have been obtained in Chicago and more are expected daily. In Kansas 300 tax refund certificates are being investigated.

The rousing of public opinion, inclined, especially in the East, to be apathetic is necessary to the success of the campaign. Public indifference can be dissipated by forceful demonstrations that tax evasion causes the increase of other State taxes, loss of improved roads, damage to motors from adulterated fuel, unemployment through destruction of legitimate retail outlets, banking weakness in communities subject to price wars and the failure of service station companies, not to mention decreased revenue to petroleum stockholders, lowering the spending power of some 2,000,000 citizens.

A second important step in the campaign will be to eliminate officials who are unable or disinclined to correct abuses of the State tax laws. Officials seem to be divided into three classes: those who are actually dishonest (probably a very small number) those who are honest but who lack an adequate enforcement staff, and finally officials (such as those in Pennsylvania) who are both honest and sufficiently energetic to force the State to furnish them with the necessary power and equipment to combat successfully the attacks of bootleggers on the funds belonging to the State treasury.

Perhaps a fourth class should be named to include those who fail to realize the extent of the abuses resulting from tax evasion and who are inclined to regard the outcry about it as exaggerated. James Duce, president of the North American Tax Conference and Chief Oil Inspector of Colorado, was quoted recently in a newspaper interview, for example, as saying that all the activity about tax evasion was "absurd." The campaign against tax evaders he characterizes with unusual lack of vision as "the red herring drawn across the trail by monopoly which needs careful watching."

Somewhat further in the future appears relief in the form of uniform tax laws for all States. Although this is repeatedly suggested by men in a position to know the difficulty arising from the confusion of varying levys and means of enforcement, its actual existence seems to belong to the more or less distant future.

When oil companies, State officials, and the motoring public become interested, when subsidies to evaders in the form of tax exemptions are done away with, when lax or dishonest officials are removed from positions of authority, and when tax laws are provided with proper means of enforcement, gasoline bootlegging will be reduced to a harmless type of petty fraud and the important racketeers will move on to some other industry.

New Gas-powered Pump System Developed

Combining Economy of Operation, Increased Production and Reduced Rod Trouble, this Simplified Pumping Unit Operates Successfully on 8000 Ft. Wells.

By H. A. Brett

THE desirability of a machine capable of performing a definite operation is directly proportional to its simplicity. This fact becomes more apparent as the necessity increases for leaving the machine unattended for long periods of time. This is particularly true of oil well pumping equipment which, to be acceptable, must be thoroughly reliable and must operate with a minimum of supervision.

To be universally satisfactory, it must possess other characteristics such as great strength, flexibility as to length of stroke, number of strokes per minute, easy pumping motion, mobility or its equivalent so as to facilitate pulling, compactness, ease of installation, and low operating costs.

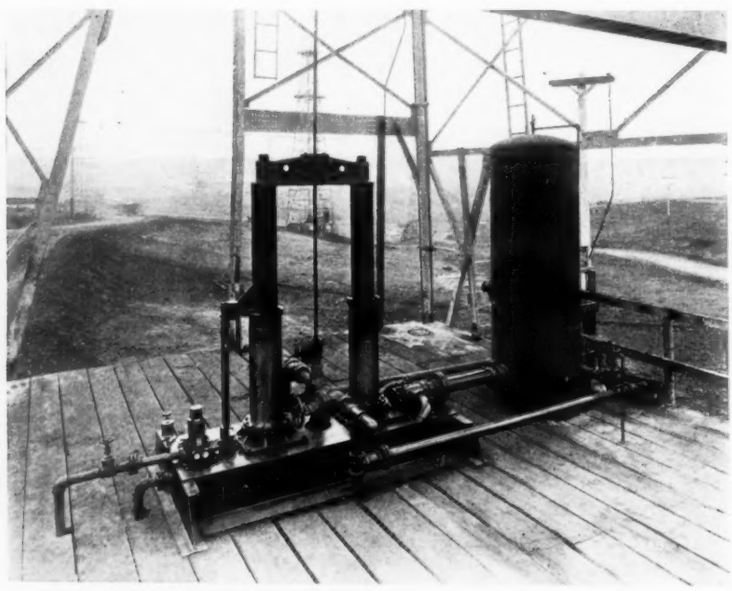
A pumping unit has been developed and is in successful operation which satisfies the above requirements to a marked degree. When once set in motion and adjusted, it continues to operate without further attention except for routine filling of the lubricators. The length of stroke may be varied from six inches to six feet and the speed of pumping varies from one-half to fifteen strokes per minute. Easy access to the well for pulling operations is had by taking out a few bolts and lifting off a portion of the unit.

New Operating Principle

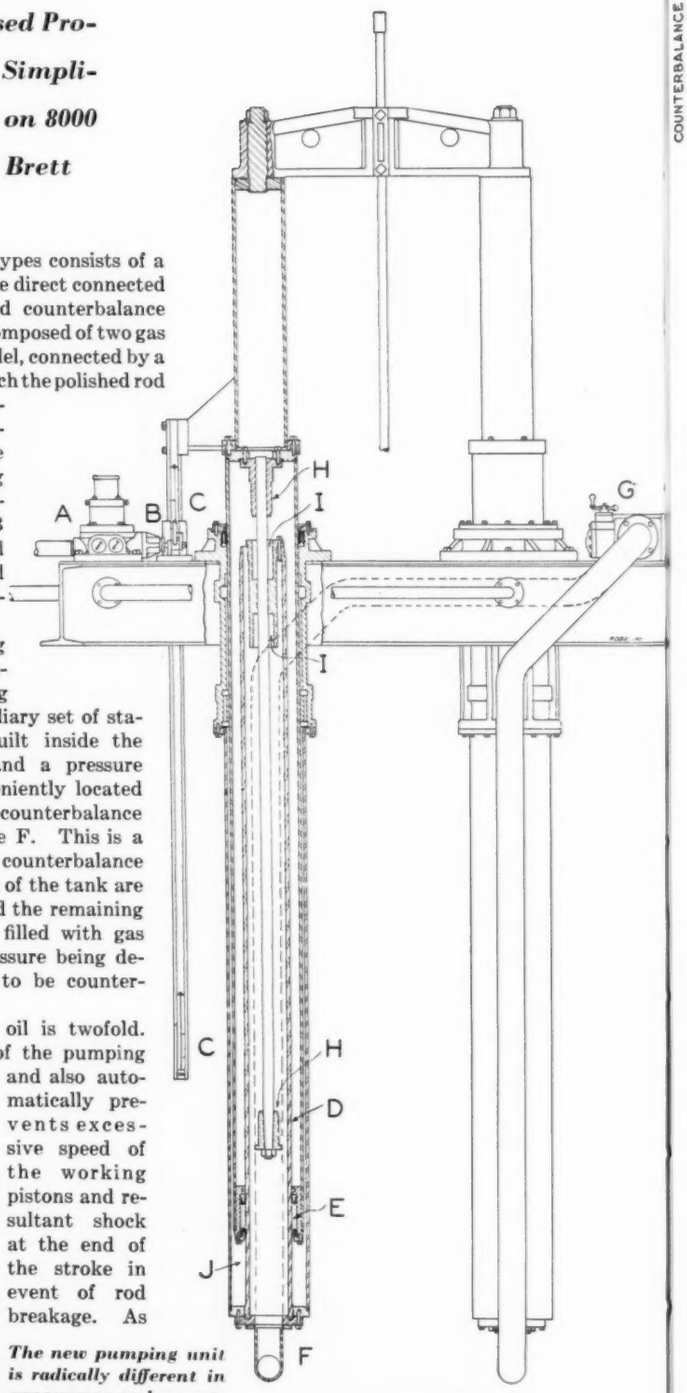
THIS pumping unit, which is radically different in appearance and operating principle from familiar types consists of a reciprocating straight line direct connected single acting engine and counterbalance device. The engine is composed of two gas operated pistons in parallel, connected by a yoke or carrier bar to which the polished rod is attached. The operation of the engine is controlled by a piston valve A in the accompanying diagram pressure operated by a pilot valve B which in turn is tripped by stop rods C attached to the yoke which connects the pistons.

The counterbalancing device which is an integral part of this pumping unit consists of an auxiliary set of stationary plungers D built inside the working plungers E and a pressure tank, not shown, conveniently located and connected to the counterbalance plungers D by the pipe F. This is a closed system. The counterbalance cylinders and a portion of the tank are filled with a light oil and the remaining portion of the tank is filled with gas under pressure, the pressure being determined by the load to be counterbalanced.

The purpose of the oil is twofold. It controls the speed of the pumping and also automatically prevents excessive speed of the working pistons and resultant shock at the end of the stroke in event of rod breakage. As



The new pumping unit is radically different in appearance and operating principle than any type to which the operator is accustomed.



Drawing of the unit illustrating construction and method of operation.

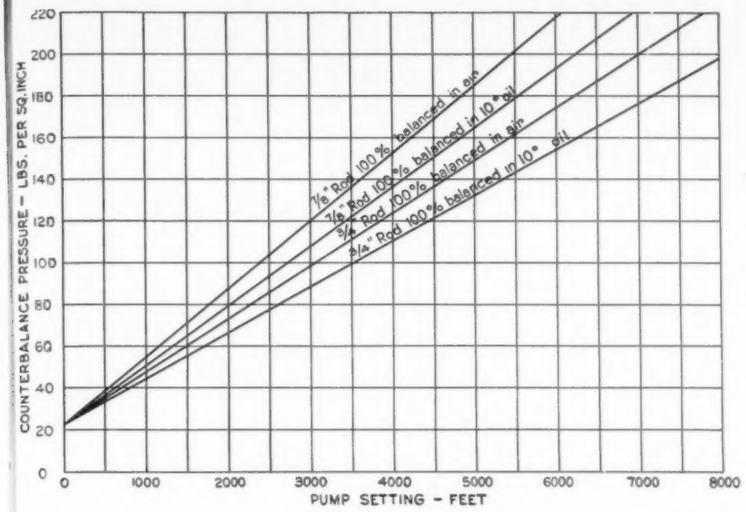

COUNTERBALANCE PRESSURE – LBS. PER SQ. INCH
PUMP SETTING – FEET
7/8" Rod 100% balanced in air
7/8" Rod 100% balanced in 10° oil
3/4" Rod 100% balanced in air
3/4" Rod 100% balanced in 10° oil

Chart 1
Counterbalance pressures with 3/4-inch and 7/8-inch rods 100% balanced in air and in 10° oil.

the working pistons move up and down during the pumping cycle, the oil circulates back and forth between the counterbalance cylinder and tank passing through a special throttling valve G, the opening in which controls the speed of the engine. By closing this valve the engine may be stopped in any position.

Compensating Rod Motion

IN ORDER to give an easy and efficient motion to the rods, provision has been made to apply gradually the lifting force at the beginning of the stroke until elongation of the rods is complete and also to modify the force at the end of the upward stroke so as to compensate for and utilize the recoil of the rods incident to their acceleration and stoppage.

This compensating rod motion is accomplished by the use of a dash pot located in the upper portion of the operating valve, the operation of the dash pot being controlled by a bypass valve. By the use of this device, the motion of the rods is further controlled in that they are caused to pause an instant at the completion of the down stroke to allow the pump valves to close.

A safety feature is incorporated in the design of this unit consisting of a stop rod H in the center of each counterbalance plunger which in extreme up or down stroke positions enters a dash pot I thereby causing the pistons to come to an easy stop in the event of rod breakage or failure of the throttle valve in the counterbalance line. During normal pumping this stop rod does not enter the dash pot.

The installation of this pumper is very simple and inexpensive. It is set on the derrick floor which must be sufficiently rigid to support the pumping load and holes are cut in the floor to accommodate the cylinders which extend into the cellar. The counterbalance tank may be set on the derrick floor or outside the rig as desired. No special housing or elaborate foundation is required.

Operating Cycle

THE operating cycle is briefly as follows. Either wet or dry gas under sufficient pressure is supplied to the main valve. This gas may be obtained from the well itself, from adjacent wells, or from a compressor plant if sufficient gas at the required pressure is not available from either of the first two mentioned sources. This gas is also applied through a regulating valve to the top of the counterbalance tank, the pressure being determined by the load to be counterbalanced (see Chart 1). From the main valve the gas is directed to the annular spaces J between the inner and outer cylinders where it acts on the working piston causing it (and also the rod string) to rise.

As the piston rises, fluid from the counterbalance tank passes through the throttle valve to the bottom of the inner or counterbalance plunger D through the pipe F filling the space left by the retracting piston. This fluid also fills the annular space above the piston in the working cylinder, being in direct communication with the fluid in the inner cylinder by means of ports in the spider which support the dash pot I. The displacement of this fluid, as the working piston rises, controls the rate of upward movement by exerting back pressure against the throttle valve.

At the completion of the upward stroke, the reversing rod trips the pilot valve which moves the main valve to such a position that the gas supply is cut off and the gas in the working cylinder caused to exhaust to the gas gathering line. As the pressure is relieved the pistons fall by gravity due to the weight of the rods, the fluid in the inner cylinder being forced back into the counterbalance tank compressing the gas therein. The pilot valve is again tripped by the reversing rod and the cycle is repeated.

By means of the dash pot arrangement previously mentioned, the flow of the incoming and exhaust gas is retarded for an instant at the beginning and end of the stroke. The rate during the remainder of the stroke is uniform regardless of sucker rod stretch or variation in load. It will be noted that, throughout this complete cycle, gas under a moderate pressure is the only power required to operate the engine, that the gas has been expanded only, none used or wasted.

Will Pump 8,000-Foot Well

THE application of this type of pumper is in fields in which sufficient gas at the required pressure is available at very little or no cost. A compressor installation to furnish gas for the operation of one well is not economical. Under certain conditions it might prove advantageous to install a compressor plant for the operation of several jacks, or after the wells in a certain area have passed from the gas lift stage to the pumping stage to equip the wells with gas operated pumping jacks and utilize the high pressure compression plant by converting to a low pressure plant for the operating of these jacks.

This gas operated pumper has successfully pumped wells from 2,500 to 8,000 feet. Highly efficient machines, other things being equal, are to be preferred to those less efficient; however, certain conditions may obtain which will allow the less efficient machine to operate more economically than another type which is more efficient.

The use of this gas operated pumping

(Continued on page 177)

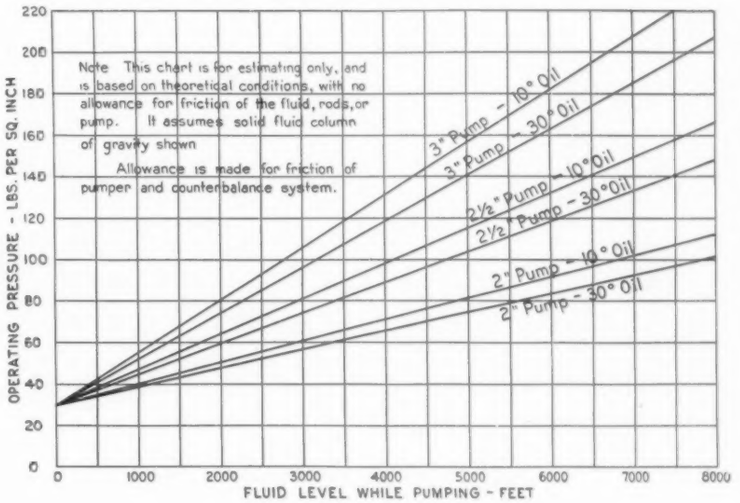

OPERATING PRESSURE – LBS. PER SQ. INCH
FLUID LEVEL WHILE PUMPING – FEET
Note This chart is for estimating only, and is based on theoretical conditions, with no allowance for friction of the fluid, rods, or pump. It assumes solid fluid column of gravity shown
Allowance is made for friction of pumper and counterbalance system.
3" Pump – 10° Oil
3" Pump – 30° Oil
2½" Pump – 10° Oil
2½" Pump – 30° Oil
2" Pump – 10° Oil
2" Pump – 30° Oil

Chart 2
Theoretical operating pressure required for 2", 2½" and 3" pumps at different depths.

Design Trends in Vapor Recovery Systems

Experience Indicates That Most Efficient Results are Obtained by Preventing Formation of Vapors at Source Rather than Retrieving Losses.

By F. L. Kallam
Foster Wheeler Corporation

THE process of refining crude oil consists of segregating the raw oil into its component parts, or groups of component parts. The majority of such parts have commercial value, the remainder do not, and for this reason, segregation is necessary. In ridding the oil of these undesirable fractions, certain of the valuable components are transformed into valueless components, or, they are lost along with the unwanted fractions removed in the course of the refining operation. In the light of our present knowledge the first type of loss may be classed as unpreventable, while in the case of the second, the loss is preventable. The function of a vapor recovery system in a refinery is, therefore, to reduce the economic loss occurring from the vapors released during the refining procedure by reclaiming the valuable constituents existing in such vapors.

It should now be apparent that the vapor recovery system exists by reason of the fact that commercial refining operations are not one hundred percent perfect. In other words, it is not possible to produce petroleum commodities having the desired characteristics without a loss of some of the valuable constituents in the operation. When this is accomplished in the major refining operation there will, of course, be no need for the vapor recovery system as we now understand the term. In this connection, perhaps it might prove interesting to observe the tendency along these lines since the introduction of recovery systems to refineries.

The first vapor recovery systems were installed in refineries to reduce the evaporation losses sustained at the look-boxes, working tankage, and tank farms. They may, therefore, be looked upon as added auxiliaries to already existing refineries, since their purpose was to treat vapors ordinarily evaporating from light finished products. Such recovery plants consisted of a gas gathering system whereby the vapors normally evaporating to the atmosphere were collected and processed in a gasoline recovery unit, the resulting scrubbed vapors being utilized for plant fuel.

In the majority of cases the gasoline recovery unit was a conventional absorption plant, although in some instances, the compression system was used. In either case, the design was that in vogue in the natural gasoline industry at the time, which called for a relatively low normal butane extraction of the order of 30–40 percent. This degree of extraction was entirely satisfactory since it resulted in a recovered gasoline having the maximum volatility which could be handled by the refiner in the blending operation. On the whole these early systems were considered satisfactory since they decreased the evaporation losses and greatly reduced the fire hazard. What was not always recognized, however, was that much of the gasoline produced was really the result of recycled vapors.

The advent of the stabilizer a few years later made these early recovery plants inadequate from the standpoint of butane extraction, and numerous additions and modifications were necessary to give them this needed capacity. The butane fraction thus became especially valuable by reason of the stabilizer's ability to substitute normal butane for propane in the finished product. It was found that approximately 3.6 volumes of normal butane could replace one volume of propane in a gasoline and yet not raise the vapor pressure, and at the same time, give an actual increase in net yield of about 2.6 percent. The introduction of the stabilizer into the recovery plant placed the volatility of the recovered gasoline under control and thereby reduced much of the former recycling of vapors.

So successful did the stabilizer prove in the recovery plant that it was next introduced for rectifying the gasoline from the pressure stills. This move produced a cracked gasoline of very stable nature, in the average case the distillate containing only small amounts of normal butane as the lightest component, and often, the rectification was carried on down to the point where pentane was the lightest fraction present. These changes again disturbed the balance in the recovery plant since the evaporation losses due to the treating operations and subsequent rerunning of the pressure gasoline became practically nil. It became necessary, however, to take the liquid fractions removed in the debutanizing operation directly to the recovery plant stabilizer, and the remaining fractions in the vapor phase directly to the recovery plant.

There is no question but that the vapor recovery system has been forced to cope with constantly changing conditions ever since its inception and today is no exception. Although

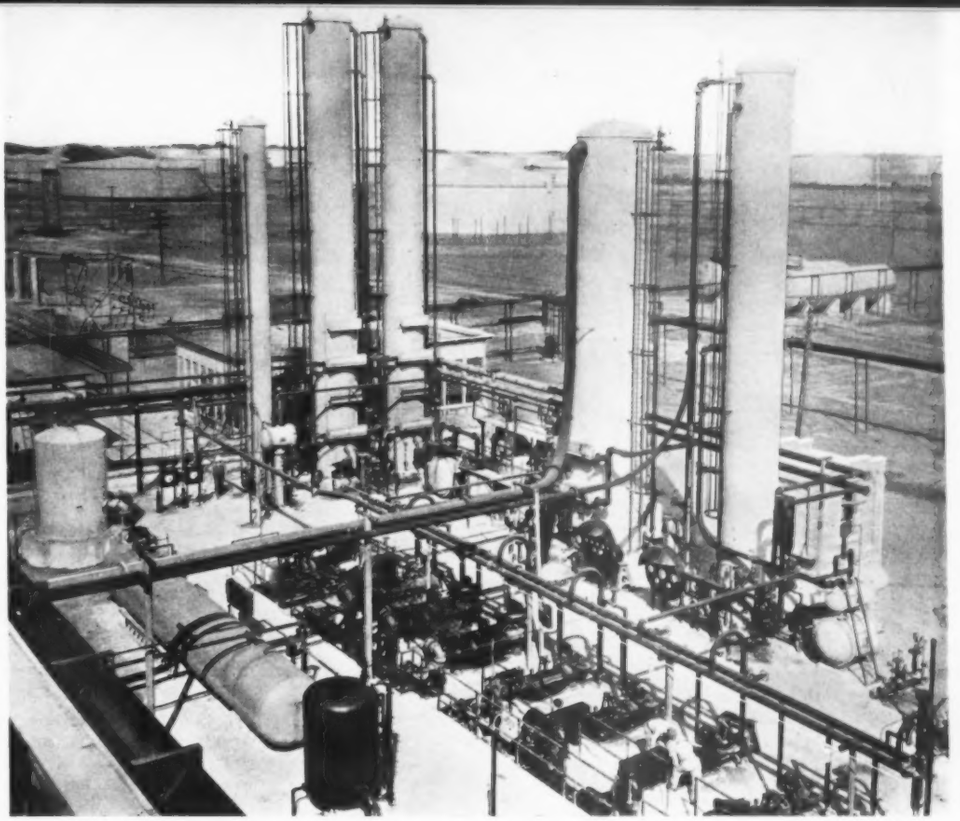
Two still distillation unit showing absorber and final stabilizer unit.

the more recent recovery installations have possibly resulted from the use of cracking facilities, a new project must consider how far the refiners will go in raising the octane number of their gasoline within the next few years. If regular gasoline is raised to 70 octane number practically all refiners will be forced to either add cracking equipment, or bring their present units up to date, as well as install the necessary reforming units to balance up the final gasoline. These changes and additions will cause the vapor recovery system to be altered accordingly and will incidentally call for greater stabilizer capacity as well as sharper fractionation. The trend of vapor recovery plant design is decidedly towards preventing the formation of vapors at the source, rather than attempting to retrieve the losses after they have occurred.

Before continuing further it will be well to point out in no uncertain manner that there is no one system of vapor recovery, no one standard plant, no one standard flow, suitable to all refineries. Each refinery presents a different problem which must be studied in its entirety before a suitable type of stabilizer and recovery plant can be selected. A plant which is highly satisfactory in one refinery may prove absolutely inadequate or ridiculously overdesigned in another. The process must be developed to meet existing conditions, or predicted conditions, if it is to justify itself from the standpoint of operating economy throughout its probable life.

The quantity of vapor to be processed and the butane extraction to be made by any recovery system can only be determined after a complete survey and study of the particular refinery where the installation is to be made. In a paper of this scope space permits only mentioning the fact that the vapors in general should be made available for processing at the highest pressure possible, so that the minimum of compression will be required. Probably no one single item will affect the recovery plant design as will the amount and quality of the vapors to be handled from the debutanizer unit. No rule can be set down to cover this operation since it depends upon numerous factors. One basic principle should be adhered to, however, and that is, to take overhead from the debutanizer directly to the recovery plant and stabilizer as much of the pressure gasoline as will remain color stable. To illustrate this point: in the case of one particular pressure distillate, it was found possible to comply with the above and take 14 percent overhead, while in the case of a second pressure gasoline the overhead could be increased to 22 percent. As the pressure distillate throughput in the average refinery is a relatively large quantity, the vapors removed in the so-called debutanizing operation are a controlling factor in the recovery plant design.

It is also necessary to decide whether the vapors from the cracking plant, debutanizer, straight-run unit and other sources can be treated as a composite gas. Generally this is the case, but in certain instances it is far more economical to keep the corrosive gases isolated from the major portion of the vapors during processing. In still other cases, it is preferable actually to treat the corrosive portion of the gas, thus removing the troublesome hydrogen sulphide and permitting all of the vapors to be treated together. This treating prevents serious plant corrosion and can be accomplished by lime-scrubbing in simple cases, or by resorting to any one of several patented methods of hydrogen sulphide removal in others. It is fortunate that under practically all these conditions the gasoline produced from the recovery plant will seldom require more than a caustic or hypo-chlorite treatment in order to render it suitable for use in the final motor fuel.



Single still distillation unit showing absorbers and final stabilizer unit.

Now as to the actual method to be used in recovering the gasoline fractions from the vapors, two general types are available. The first, and the simpler, consists essentially of compressing the vapors to sufficiently high pressure and introducing them directly into a stabilizing column. Here the rectification must be such that the overhead vapors may be discarded directly to the dry line without loss of valuable constituents, leaving the bottoms stabilized by being freed of the undesirable fractions. Such a type of plant, while appealing from the standpoint of simplicity, can only be employed successfully when the composition of the gas to be treated is suitable for its application, and if this fact is not recognized, a disastrous installation will result. The method is particularly attractive in the case of small refineries where the use of the conventional absorption plant is naturally costly, and where it might not prove economical to go to the latter system even to obtain better extraction efficiencies. In certain instances where the capacities were small the cost of installing and operating an absorption system was found to be somewhat lower than the cost of the compression system up to a normal butane recovery of approximately 70 percent. For recoveries greater than this the cost favored the compression method to the extent of 10 percent for 90 percent recovery of the normal butane. It is desired to emphasize again that the conditions for the compression method must be correct for successful operation, and for this reason, most recovery systems will be found utilizing the more flexible conventional absorption unit.

The fundamental principle of the absorption unit is to contact the vapor under controlled pressure and temperature conditions with an exact amount of light oil which will result in the absorption of the desired gasoline components from the gas by the oil. The quantity of definite specification oil used per unit volume of gas treated must be such as to remove all of the desired valuable components, and this condition unfortunately also results in the absorption of varying percentages of the lighter undesirable constituents. These latter fractions must consequently be discarded either at the distillation unit or in the final stabilization of the recovery product.

After the oil has absorbed the various gasoline fractions from the vapors, it is charged to the distillation unit where, by the application of heat and live steam, the absorbed fractions are driven from the absorption medium. The stripped oil from the distillation unit is now again in suitable condition to be reintroduced into the vapor stream where it performs its absorption function as previously.

The actual transferring of the gasoline fractions from the vapor to the oil is a solubility phenomenon giving use to the generation of heat in the absorber. As the selectivity of absorption is controlled by the vapor pressure of the oil and gasoline fractions, the greatest economy resulting when the absorption temperature is low, it has become the practice to introduce coolers within the reaction zone for removing the heat of absorption. These coolers are generally water cooled, although in some of the latest installations the cooling is obtained by the use of propane acting as a refrigerant.

In the more common type of distillation unit, as shown in Figure 1, a single still is employed which operates at pressures in the neighborhood of 30 lbs. Under these conditions it is not physically possible to condense all of the gasoline fractions driven off in the still, and these uncondensed vapors are made up largely of the undesired gasoline fractions which were absorbed from the gas in the absorber. They also contain quantities of valuable gaso-

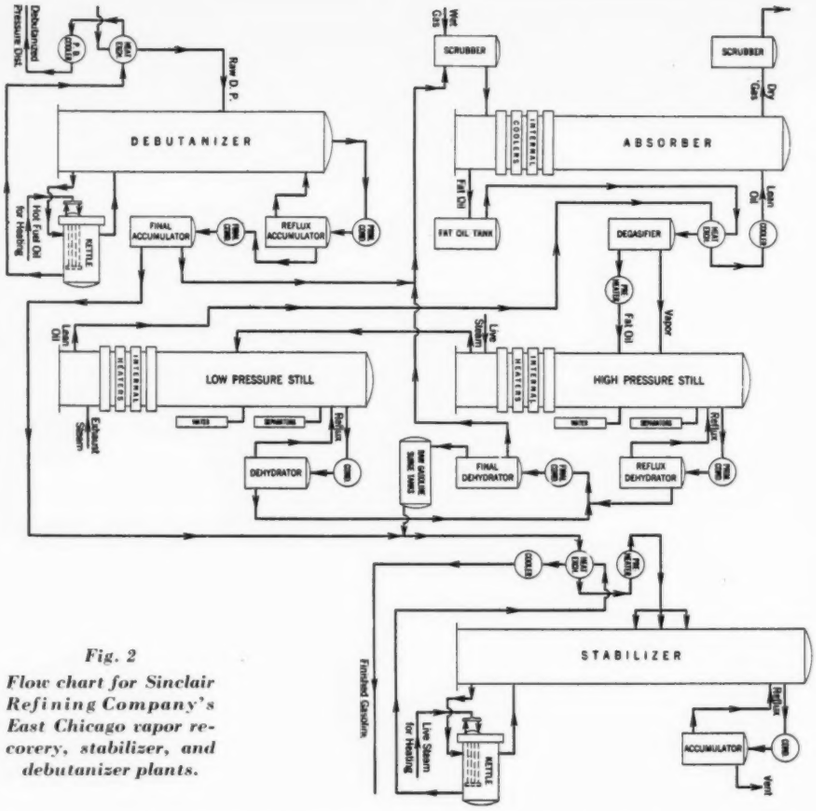


Fig. 2
Flow chart for Sinclair Refining Company's East Chicago vapor recovery, stabilizer, and debutanizer plants.

line fractions which cannot economically be discarded, so it becomes necessary to treat and recover such fractions from the uncondensed still or vent vapors. One scheme for doing this is indicated in this particular illustration, where the vent vapors are reabsorbed in an auxiliary absorber, the enriched oil being returned to the main stilling system. It will be noted that additional oil must be pumped for this purpose.

Many plants of this type do not use this system of reabsorption, but compress the vent vapors sufficiently to introduce them into the main absorber along with the wet gases to be processed. In other cases, in order to avoid this compression expense, the still pressure is raised to a point somewhat higher than the absorption pressure so that the vapors will flow under this pressure differential into the main absorber. Such an arrangement, while eliminating compressor expense, results in much higher steam rates to the still in order to strip the oil to the required degree of leanness. This fact requires consideration in the design of the condensers so it is doubtful if on the whole the scheme results in any appreciable saving. Still other plants, while employing compression, discharge the compressed vent vapors at sufficiently high pressure directly into the final stabilizer column, or, the condensate derived from such compression. Just which method is best for handling the vent vapor must be decided for each particular installation, although it is felt that recirculation of such vapors through the main absorber should be avoided. It is necessary, therefore, when using the single still system, either to circulate additional oil to care for the vent vapors, or to provide compressor capacity for such vapor.

The cost of operating such an absorption unit supplemented with a vent vapor compressor will vary with the percent of normal butane recovered, since the oil circulation required varies directly with this extraction factor. A typical example of this cost variation in the case of a small recovery unit was that 90 percent recovery of the normal butane cost 27.8 percent more than for 70 percent recovery, while 99 percent recovery was about 41.4 percent greater. These figures show the necessity of carefully considering the butane extraction factor when designing a recovery plant, since it is obviously uneconomical to design for 90 percent butane extraction when only 70 percent extraction can actually be utilized. Practically without exception the recovery plants installed up to the present time have been over-designed from this standpoint, and this has been largely due to the refiner over-estimating the amount of butane which can actually be used in the finished products. A great many plants have been designed for 85–90 percent recovery, and where a bottled gas product is not produced, these figures have proved to be too high for actual needs.

The more recent development in distillation units is to employ two stills instead of one, the principle here being to operate the primary still, together with its condensing system, at high pressure such that practically all of the undesirable fractions are removed at this point in the system. By the use of reflux ratios in excess of four to one, high bottom temperatures maintained by internal heaters, an appropriate number and arrangement of fractionating plates, it has been found possible to remove vapors from the high pressure still condenser that do not contain materials heavier than normal butane. In fact, at pressures in the neighborhood of 100 pounds such vapors will contain even a relatively small percentage of normal butane. What is even more gratifying is the composition of the gasoline fractions left in the partially stripped oil leaving the bottom of the high pressure still and entering the low pressure still for final stripping. This oil has been found to contain no fractions lighter than iso-butane, and the percentage of this component present

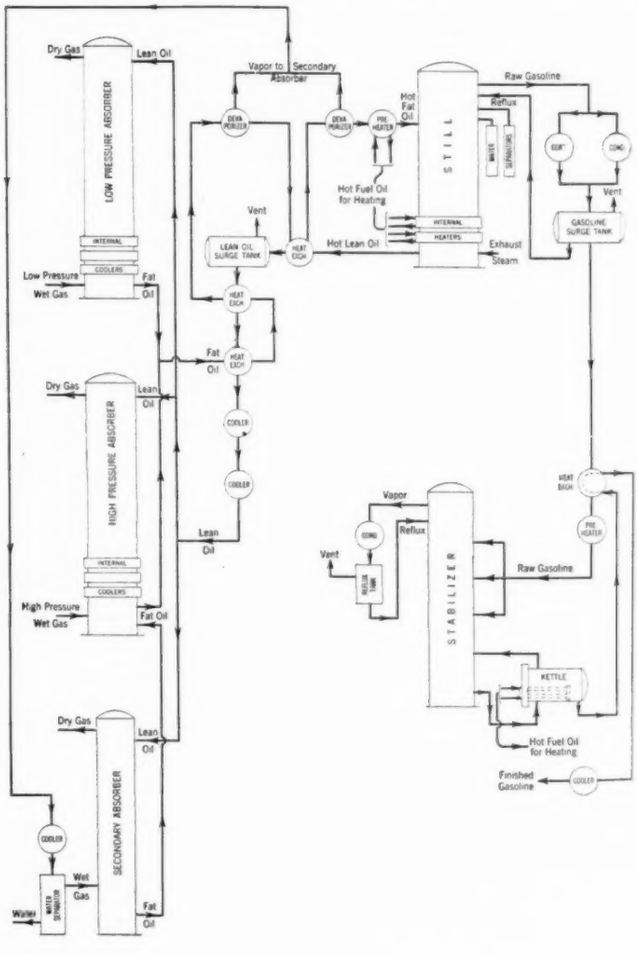


Fig. 1
Flow chart for Pure Oil's Marcus Hook vapor recovery plant and stabilizer unit.

was exceedingly small. For a flow sheet of a two still plant refer to Figure 2.

It is now obvious that the oil fed to the secondary still contains a very stable gasoline product, which permits this still to be operated at pressures of the order of five pounds. This pressure permits great steam economy in removing the gasoline from the oil at this point, and yet does not require a penalty on the condensing end in the way of low efficiency because of the stable fractions to be liquefied. In fact the condensation of these vapors is essentially 100 percent, so that the uncondensed vapors away from the unit may be considered zero for all practical purposes.

The double still system is thus a great stride forward since there are no vent vapors to be handled from the low pressure still, and those from the high pressure side of the system, which exist in appreciable quantities, are of such dry nature that they may be passed directly into the fuel gas system without economic loss. The system therefore, ordinarily requires no recycling of vapors, no compression of vapors, nor circulation of extra oil for processing uncondensed vapors.

The other great advantage is the saving in steam required by the distillation unit in freeing the oil of its gasoline content. For the two still arrangement just described, operating with 60 deg. F. cooling water, there will be required in the high pressure still about 0.03 lbs. of steam per gallon of lean oil circulated, this steam being at a pressure somewhat higher than that carried on the still itself. The low pressure still at the same time will require approximately 0.06 lbs. per gallon of lean oil, but this steam may be exhaust at not over 10 lbs. pressure. This gives a reduction steam rate of 0.09 lbs. per gallon of lean oil as against 0.15 lbs. for the single still unit, or a saving of 0.06 lbs. per gallon in favor of the double distillation unit. Such a saving is appreciable when it is considered that identical products are produced from either system. The first cost of the two still system is about 15 percent greater than an identical capacity single still plant.

One of the features contributing to the development of this two still arrangement has been the fact that in most refineries there are available various product streams from which heat can economically be extracted. Fortunately such streams are at high temperature, from 500–700 deg. F., which permits the necessary high temperature being maintained in the high pressure or primary still. Should this high temperature excess heat not be available, then high pressure steam of the order of 300 lbs. would be necessary for the successful operation of the system. As such pressure steam is normally not available in the average run of refineries it sometimes becomes necessary to provide the high temperature heat source by the use of an isolated gas oil circuit. In one recovery plant now under construction this has been found necessary, and a tube still heater is being installed which will heat gas oil to 600 deg. F., after which the oil will circulate through the various heaters of the distillation unit. After loss of heat in this fashion the oil will be returned to the tube still for reheating.

Little need be said about the stabilization of the recovered gasoline even though the operation is an exceedingly important one to the refiner. Because of the high butane extraction, the propane content of the extracted gasoline is usually considerably higher than that produced in a natural gasoline plant. The refiner is anxious to increase the gallonage by blending in the greatest percentage possible of stabilized recovery gasoline and still avoid vapor lock in the finished motor fuel. Consequently the stabilizer design must be such as to permit the removal of large overhead volumes with sharp fractionation between normal butane and the isomer, or, in the normal butane fraction itself. The characteristics of the stabilized product will vary over a wide range depending upon local refinery conditions and requirements. As an example in the accompanying table are given some of the characteristics of the recovery gasolines from three refineries, each of which is considered satisfactory by its maker.

Characteristics of Recovery Gasolines

Sample	No. 1	No. 2	No. 3
Gravity, deg. A.P.I. @ 60 deg. F.	88.5	89.0	96.0
Distillation recovery, percent.	87	90	81
Reid vapor pressure @ 100 deg. F., lbs. per sq. in. absolute.	30	29	36

In all cases it is good practice to store the recovered or blending gasoline in pressure tankage so as to hold the evaporation losses to a low figure. This system permits blending as the motor fuel leaves the refinery.

Companies now operating vapor recovery plants report actual reductions in estimated losses from as high as 12 to as low as 5 percent by such installations. In addition, the recovery system makes the refinery practically self-supporting from the viewpoint of blending requirements. An efficient system can only be worked out after careful consideration of the particular requirements of the refinery and its markets. Further, the complete recovery system should consist of a pressure distillate debutanizer, an absorption plant and final recovery gasoline stabilizer. In cases where the refinery is operated on light crudes, consideration should be given the addition of a crude oil stabilizer to the recovery system.

▼

Refiner's Obligation to the Motorist

INCREASED need for gasoline stabilization and rigid vapor pressure control to remedy automotive vapor lock is clearly demonstrated by calculations made from data contained in the Twenty-fourth Semi-annual Motor Gasoline Survey, part one of which has just been released by the United States Bureau of Mines (R. I. 3162). The average Reid vapor pressure of 221 "competitive-price gasoline" samples taken from 19 American cities in August of 1931 was 7.7 lb. per sq. in., representing an increase of about seven percent over the value of 7.2 lb. per sq. in. given in a similar survey for 1930, while the average value for 98 samples of "premium-price motor fuels" showed an increase of about six percent from 7.0 to 7.4 lb. per sq. in.

Vaporization of liquid fuel in the fuel line and those passages of an automobile designed to carry and meter liquid fuel causes what is commonly called vapor lock. Since a given weight of gasoline, in the vapor form, will occupy in the neighborhood of 200 times its liquid volume, it is obviously impossible for small orifices and passages in the fuel distributing system to pass enough gasoline vapor to produce an explosive mixture. A comparatively small amount of vapor will usually so limit the flow of gasoline that the motor will not perform properly. Vapor lock occurs when the temperature in the fuel distributing system becomes so high that the vapor pressure of the fuel exceeds the atmospheric pressure.

In a paper given before the twelfth annual meeting of the American Petroleum Institute at Chicago in November 1931, by O. C. Bridgeman, H. S. White, and F. B. Gary of the United States Bureau of Standards, expressions were included from which the temperature at which vapor lock will occur can be calculated from the Reid vapor pressure. Using the data of the Bureau of Mines Report as a basis, the vapor locking temperature was calculated for samples from each of the 19 cities, due correction being made for change of atmospheric pressure with altitude. The vapor lock temperature varied from 129 to 142 deg. F. for "competitive-price gasoline" and from 124 to 144 deg. F. for "premium price motor fuel" samples, giving average values of 133 and 135 deg. F. respectively. Av-

(Continued on page 177)

Percentage of Cars in which Vapor Lock Will Occur

City	Normal July Temperature in deg. F.	Motor Idling		90 deg. F. at 40 m.p.h.	
		Competitive	Premium	Competitive	Premium
Boston	72	23	15	13	11
New York	74	26	15	11	2
Washington	77	23	23	2	2
Pittsburgh	75	34	23	17	6
Cleveland	71	15	6	11	2
Atlanta	78	32	23	6	2
Chicago	74	32	23	17	11
New Orleans	82	43	15	4	2
St. Louis	79	28	28	2	2
Minneapolis-St. Paul	72	21	21	11	11
Omaha	77	23	32	2	11
Tulsa	81	34	49	2	11
Dallas	84	51	28	6	2
El Paso	82	21	75	2	45
Denver	72	23	34	13	34
Salt Lake City	76	43	34	13	13
Seattle	63	9	2	13	2
Los Angeles	70	9	9	2	2
San Francisco	58	4	2	17	2

International News and Reports

An additional tax of two percent on petroleum products has just been imposed by the German Government.

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South African railroads transported 1,493,483 bbl. of motor fuel from ports of the Union during 1931, to interior points.

▼

The sugar refining industry on the East Coast of the United States has consumed 2,766,284 bbl. of oil during the last ten years.

▼

In service on French waterways there are nearly 400 tank vessels and barges for the transportation of petroleum products. The aggregate capacity is about 120,000 bbl.

▼

Petroleum exports from Roumania to Great Britain increased in 1931 and amounted to 10.6 percent of the total consumption, compared with 6.7 percent in 1930 and 4.2 percent in 1929.

▼

Late last year the Salford (England) Transport Committee decided to operate two of the town buses on creosote fuel oil which was obtainable at 4¾d per Imperial gallon as a result of the experiences with this fuel by the Belfast General Omnibus Company.

▼

On March 20 a third shipment of Roumanian gasoline arrived at Baltimore consigned to the Sunny Service Oil Company of Detroit. The Norwegian tanker RAILA, which brought this cargo met very stormy weather at sea and was disabled about 300 miles off Cape Hatteras, but was able to proceed to Baltimore.

▼

A new topping plant recently completed by the Standard Oil Company of Venezuela at Carapito, Eastern Venezuela, will supply a large quantity of fuel oil annually to the Chilean Nitrate industry which has a large number of Diesel engines in service. Hitherto this fuel has been supplied from California.

▼

A bill creating a Government monopoly for the distribution of petroleum products in Newfoundland is being pressed by Sir Richard Squires, Prime Minister. Total annual profits from the monopoly, estimated at $600,000, would be used to take care of an internal loan to be floated at once and to buy up Government obligations when these reached a low price in the open market.

▼

Drilling of a well on Towila Island, Egypt, on the Red Sea, may be continued if additional capital is obtained by Affiliated Oilfields, Ltd., a Beckwith and Company organization. The well now stands at about 3,700 ft. depth.

▼

On the grounds that a higher excise duty on petroleum products would lead to decreased production, the Government of the Dutch East Indies has refused to comply with the higher excise tax demand of the left wing of the People's Council.

▼

Regarding the new unit reported to be added to the plant of the United British Refineries, Ltd., Point Fortin, Trinidad, we are advised that it will be a Trumble outfit having a daily throughput of 7,000 bbl. of crude. The unit will be completed about the end of 1932 and will be adjacent to the existing refinery.

▼

Although exports of sugar from Trinidad set a new high record in 1931, petroleum exports made up 46 percent of the island's total. Crude oil and petroleum products aggregate 8,964,000 bbl. valued at $6,000,000 compared with 7,679,000 bbl. valued at $11,000,000 in 1930.

▼

First Chamber of the Paris law courts has decided an appeal from the decision of the Seine Tribunal for Commerce granting Fr. 40,000,000 to the Arnus Bank of Spain for breach of contract on the part of the Soviets. The appeal was decided in favor of the Arnus Bank but the amount of the damages was reduced to Fr. 30,000,000.

▼

Shell Eastern Petroleum Products Inc. has expressed its intention of adopting a policy of not increasing its retail outlets in any area where it is now operating. This policy, according to the announcement in the February-March issue of THE SIGN OF THE SHELL, Shell Eastern's house organ, is adopted in an effort to do its part toward correcting the over-investment in the marketing branch of the industry and bringing into a proper relationship investment and earning potentiality. Shell Eastern recognizes the fact that some relocation of stations may be necessary to provide the most efficient service through company service stations and dealer stations. They point out that a single outlet properly located is capable of furnishing more efficient service than several with their consequent large capital investment.

▼

In 1931 Switzerland imported 1,546,099 bbl. of gasoline, says the U. S. Department of Commerce. This compares favorably with 1,350,544 bbl. imported in 1930. Of last year's supply the United States furnished 564,859, or a drop of 119,771 bbl. compared with 1930. The new Soviet organization, Napth A.G., will make every effort to expand its sales in Switzerland during 1933.

▼

Information on Colombia's petroleum exports for the years 1927 to 1930 inclusive, have recently been issued by the Pan-American Union, Washington, D. C. Exports for 1930 were as follows:

Country	Quantity (kilos)	Value (U. S. Dollars)
United States	2,160,253,865	20,638,260
Canada	386,255,280	3,808,117
United Kingdom	25,308,460	250,011
Argentina	12,752,400	125,982
Belgium	34,857,100	344,185
Total	2,619,427,105	25,166,555

▼

Petroleum production from Canadian wells, according to a preliminary report on mineral production of Canada for 1931 published by the Dominion Bureau of Statistics at Ottawa, increased approximately 1.0 percent to a new high record in 1931 when 1,537,000 bbl. were produced. This output consisted of 1,408,058 bbl. from Alberta, 122,365 bbl. from Ontario and 6,577 bbl. from New Brunswick. The Alberta production included 1,331,070 bbl. from the Turner Valley field, 60,806 bbl. from the Red Coulee field and 16,182 bbl. from the Wainwright-Ribstone field. During the first six months of the year Canada's petroleum output recorded an increase of 46.6 percent over the total for the corresponding period of 1930. Owing to lessened demand for crude naphtha and to the provincial Government's natural gas conservation measures, the production from the Turner Valley field showed a considerable decline during the last six months of the year.

Foreign Oil Legion

Nuri Pashi, Prime Minister of Iraq, has returned to Iraq following a brief visit to London. His trip is believed to have been in connection with the activities of the Iraq Petroleum and British Oil Development Companies.

▼

A. N. Glazener, who has spent many years in the Far East directing Royal Dutch-Shell refinery operations, as well as at Curacao, and who has been with the Shell Union Oil Corporation in New York for over a year, sailed for London and The Hague on March 22.

▼

C. J. Lambkin of the Petroleum Division of the Amtorg Trading Corporation of New York, sailed on the S. S. Bremen on March 8 for Russia where he is likely to be for some time. In the meanwhile his duties will be undertaken by Morris Holtman.

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Professor A. N. Sakhanoff, formerly with the Soviet Oil Syndicate of Grozni, has left Russia and is at present in Helsingfors. We hear that he does not plan to return to Russia, but may come to the United States.

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M. Kapelushnikoff, the inventor of the world-known turbo-drill and designer of a cracking plant which combines vapor and liquid phase, has been appointed chief of a special drilling and cracking department recently formed at Baku, Russia.

F. W. Rickett, originator of the B. O. D.'s movement in Iraq.

Blank & Stoller

A. N. Glazener.

Sir Albert G. Stern, vice-president of Steaua Română Société Anonyme pour L'Industry du Pétrole, and a director of Steaua Romana (British), has returned to London from the South of France.

▼

Percy Meyer, formerly with the Anglo-Persian Oil Company at Abadan, where he acted as local honorary secretary to the Institution of Petroleum Technologists, has been appointed to the chemical staff of British Controlled Oilfields. He is now in Trinidad for the latter company.

▼

W. R. Degenhardt, chief engineer of the New Consolidated Goldfields, has been to Kohtla, Estonia, on an inspection of the shale oil properties and plant in which the company is interested.

▼

William E. Knox, who has been with the Westinghouse organization since 1921 and for some time has been in charge of sales of equipment to petroleum companies overseas, has been appointed assistant to the general manager of the Westinghouse Electric International Company. Mr. Knox has spent some time in Mexico, Canada and Russia and enjoys a wide acquaintance among oil men in other countries.

Adrian C. Minton, who in 1930 was in Europe on a business survey for the Jersey Standard interests, has been appointed assistant to J. H. Senior, coordinate director for domestic marketing of the Standard Oil Company (N. J.). Mr. Minton was recently appointed a director and general sales manager of the Colonial Beacon Oil Company and will still remain a director of the latter concern. Mr. Minton has made many trips abroad in connection with the petroleum industry including Germany, Switzerland, Poland and South America.

▼

C. W. Hamilton, Venezuela Gulf Oil Company, has been visiting Maracaibo and now is back in New York.

▼

Lord Inverforth, chairman of the British Union Oil Company, director of the British Mexican Petroleum Company, Ltd., and director of the Red Line Motor Spirit Company, arrived in New York on the SS. Mauretania, March 22. Lord Inverforth is interested in the Indiana Standard having a considerable stock holding. He is also interested in the British Oil Development Company, which is concluding negotiations for a concession in Iraq.

▼

Harry W. McCobb, production superintendent at El Centro, Colombia, for the Tropical Oil Company, is visiting the United States, where he arrived in mid-February.

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J. R. Taylor has been appointed director of purchases for the Socony-Vacuum Corporation with headquarters in New York.

▼

T. S. Cooke, vice-president, Pan-American Petroleum and Transport Company left New York on April 4, on a visit to Aruba, D. W. I.

Wm. E. Knox, Westinghouse International.

L. B. Levi, director of refining of the Socony-Vacuum Oil Corporation, has returned from a visit to Australia.

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LIBRARY

BOOKS relating to the petroleum industry may be obtained from the Book Department of WORLD PETROLEUM at the publishers prices plus postage.

▼

General

A Basis for Stability, by Samuel Crowther in collaboration with twenty-one leaders of American industry. (360 pp. Price $3.00.) In adding another to the large crop of books induced by the present business depression Mr. Crowther has succeeded in producing one that approaches the subject from an unusual angle. Expressing the views of men who are conspicuous figures in American business life he presents the varying problems of many different industries in discussions by men who are specialists in these various fields while at the same time giving their views on the general economic situation and the means of improving it. The chapter on oil, written by Walter C. Teagle, President of the Standard Oil Company of New Jersey, is published in full in other pages of this issue.

▼

Oil Conservation and Fuel Oil Supply (165 pp. $2.50). One of a series of studies being made by the National Industrial Conference Board dealing with the supply and demand of various petroleum products in relation to the problem of conservation. Fuel oil, considered in this light, has received comparatively little attention, but obviously detailed knowledge of fuel oil supply and demand is important to a complete understanding of the difficulties involved in rational conservation. This detailed study of the factors determining production and consumption of fuel oil covers its relation with other forms of industrial energy, the outlook for its future use, and the probable effect of a program of conservation in relation to the higher yield of gasoline from crude with the proportionate decline in the recovery of fuel oil. When it is considered feasible to increase the recovery of gasoline from its present 39 percent to 60 percent, coupled with a program of conservation, the supply of fuel oil will become a problem of major concern. As the National Industrial Conference Board was able to avail itself of the guidance of its advisory committee, including among others such executives of the petroleum industry as R. C. Holmes, Henry M. Dawes, W. S. Farish, W. C. Franklin, W. M. Irish, K. R. Kingsbury, and Walter C. Teagle, the soundness of the book as a foundation for consideration of the problem of conservation is obvious.

▼

Petroleum Dictionary for Office, Field and Factory, by Holtis B. Porter (234 pp.). This is a dictionary of practically all technical and non-technical terms used in all branches of the petroleum industry. It is a book that answers a long felt want and will be deeply appreciated by anyone who has attempted to look up the meaning of petroleum terms in references available before the publication of Mr. Porter's excellent work. It is a worthwhile addition to the library of any member of the petroleum industry, interested in understanding whatever he reads of a technical nature on the industry. It is particularly useful to those in the business end of the industry whose occasional contacts with technical terms leave various gaps in understanding.

▼

Stabilization of the Petroleum Industry, by Lenord M. Logan, Jr. (248 pp. $2.50) discusses details of the economic aspects of stabilization. It is thoroughly up to date and should be of particular interest to the oil industry at this time, containing a compilation of court decisions and a fairly comprehensive discussion of unit operation and proration. Designed principally for those interested in the economic aspects of the industry.

▼

World Minerals and World Politics, by C. K. Leith (213 pp. $2.00). This is an authoritative discussion of mineral resources in relation to international politics. It is not devoted exclusively to petroleum. Written by a distinguished member of the University of Wisconsin faculty and of the Mining and Metallurgical Society of America's Committee on Foreign and Domestic Mining Policy, it discusses such interesting subjects as the interdependence of nations, the international flow of minerals, the position of various nations in relation to their mineral supply, the political activity of nations directed toward this resource, and specific political measures such as tariffs, taxes, nationalization of resources, concessions, and treaties. WORLD MINERALS is a most timely book in view of governmental activity directed toward petroleum and other mineral resources at the present time. Its interest for members of the petroleum industry is, however, rather general.

▼

Pipelines

Factors Influencing Flow of Natural Gas Through High-Pressure Transmission Lines, report by W. B. Berwald and T. W. Johnson (27 pp. pamphlet: on request). This report, the result of investigations by the U. S. Bureau of Mines and the Natural Gas Department of the American Gas Association, is based on tests of some 29 different pipelines actually in use and a careful analysis of all discernible factors influencing flow through each pipe. Results of these observations compared with various existing formulas for calculating the flow of gas through pressure pipelines discredited to some extent the various existing formulas which gave widely varying results. According to its own claim the report is intended as "A brief and abstract account of the work and results of the pipeline flow investigation, suitable for the use of the operator in designing pipelines, and analyzing the effect of different operating conditions on the efficiencies of pipelines in delivering gas."

▼

Production Technology

Oil Well Completion and Operation, by H. C. George (229 pp. $3.00). This recent publication is an excellent and comprehensive compilation of various methods of oil well completion and operation, bringing together a wealth of up to date information, not formerly available in a single volume.

Mr. George discusses in some detail such varied aspects of the problem as: character of oil sands and production relations; casing methods; oil sand porosity; relation of shooting to recovery; water in oil sands and its relation to recovery; flowing wells, agitating wells, etc.; cleaning out producing wells; fishing tools used in producing wells, and oil well rejuvenation.

The reference index given throughout the book should prove of great value for readers desiring more detailed information. The text is profusely illustrated by charts and figures assembled by the United States Bureau of Mines.

United States

	Daily Production bbl.	Daily Runs to Stills bbl.	Gasoline Stocks bbl.	IMPORTS FOR WEEK Total bbl.	IMPORTS FOR WEEK Gasoline bbl.
Week Ending Mar. 5	2,140,850 309,900*	1,968,300	45,429,000	1,597,000	none
Week Ending Mar. 12	2,145,600 323,600*	2,063,700	45,661,000	1,836,000	165,000
Week Ending Mar. 19	2,157,200 329,350*	2,085,000	46,428,000	1,621,000	481,000

Underlined figures indicate improvement in statistical position—decrease in production, runs to stills, gasoline stocks or imports.

* Production of the Rusk-Gregg field, East Texas.

Tariff—Imports

THE general sales tax bill, which includes the excise tax of 1 cent per gallon on imports of petroleum products, has encountered bitter opposition in the House of Representatives but on March 25 was passed by a vote of 190 to 97.

In the meanwhile the probability of imposition of an import excise tax on petroleum products has resulted in heavy tanker movement to the Mexican and South American points of export. Therefore in the next few weeks, prior to the final ratification of the import tax bill, there will be witnessed a very considerable increase in the imports of petroleum products into United States.

Proration—Texas

THE Advisory Commission meeting at Austin, Texas, recommended a daily U. S. production from April to October of 2,373,000 bbl., of which Texas was to supply 875,000 bbl., California 475,000 bbl., Oklahoma 575,000 bbl., and Kansas 130,000 bbl.

In the three-judge Federal Court decision rendered on February 18, as reported in the preceding issue of WORLD PETROLEUM, the court decided against the constitutionality of martial law in the East Texas field. Following this decision the objecting operators, led by E. Constantin and J. E. Wrather, filed an amended petition asking that the Texas Railroad Commission also be enjoined from interference with their wells.

F. Upchurch, assistant attorney-general, filed an answer and a cross action to this suit, asking a counter-injunction to prevent Constantin and Wrather from exceeding the allowable of 75 bbl. per well per day fixed by the Texas Railroad Commission in its order issued February 25.

Federal Judge Randolph Bryant of Sherman, in Beaumont, Texas, on March 7 granted the State a counter-injunction against E. Constantin and J. E. Wrather restraining them from operating wells in violation of the Texas Railroad Commission orders. This counter-injunction was later extended to include the other seven concerns which were attempting to open their wells.

Thus closed a chapter in the history of Texas proration, the State gaining definitely the right to conserve its natural resources from both physical and economic waste. One hundred and twenty officers and enlisted men have been left in the East Texas field by Governor R. S. Sterling to act as a police force in cooperating with the Texas Railroad Commission.

The State of Texas at this time presents the greatest national reserve of petroleum and has a number of undiscovered major pools. Consequently the recent Federal decisions will go a long way toward stabilizing the oil industry as a whole and assuring it a more profitable future.

Proration—Oklahoma

THE United States Supreme Court heard on March 23 the final arguments of the Champlin Refining Company vs. Oklahoma Corporation Commission appeal, now pending. In the previous intermediate Federal action the Guthrie (Oklahoma) Federal judges upheld the State Corporation Commission in its authority to make rules and regulations for the conservation of oil and gas and for protection of the coequal rights of the several owners of land over a single pool of oil and gas. The Champlin Refining Company has added to the original appeal the question of the constitutionality of martial law in Oklahoma.

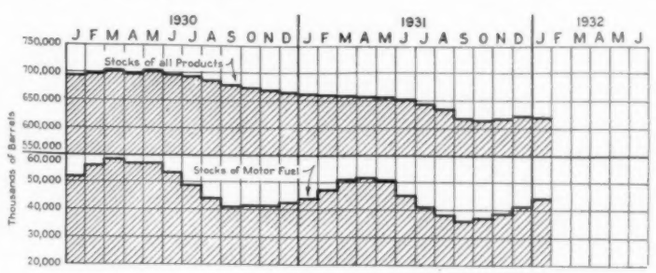
Decision of the United States Supreme Court will have far-reaching results, definitely settling one of the most controversial problems the oil industry has faced in the past two years. It is confidently anticipated that the decision will be in favor of the State Corporation Commission, thereby exercising a most favorable influence on the general situation of the oil industry.

Natural Gas—Rates

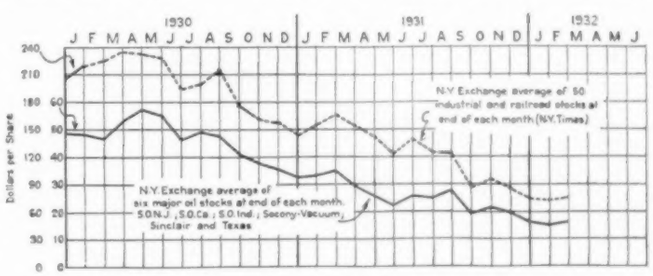
DURING the first week of March the United States Supreme Court was called upon to render another decision of great importance to the petroleum and related industries. The court held, in effect, that in an instance of interlocking directorates or other evidence of corporate relationship between a pipe line and a distributing company, the latter was obligated to offer satisfactory proof of all costs when seeking a rate increase or attempting to establish the justice of an existing rate.

The immediate result of this decision is to bring the operations of the interstate companies under the jurisdiction of State public service commissions so far as

Relation of stocks of all petroleum products to gasoline stocks.



Six major oil stocks in relation to 50 industrial stocks on the New York Stock Exchange.


1930
1931
1932
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
N.Y. Exchange average of 50 industrial and railroad stocks at end of each month (N.Y. Times)
N.Y. Exchange average of six major oil stocks at end of each month: S.O.N.J., S.O.Ca., S.O.Ind., Socony-Vacuum, Sinclair and Texas
Dollars per Share
240
210
180
150
120
90
60
30
0

these operations concern rates for gas service. In the future the related companies, owning large interstate trunk pipe line projects, will not be allowed to sell gas to city distributing companies at arbitrarily fixed prices; the price will have to be adjudged a fair one on the basis of costs submitted.

Supply and Demand

STOCKS of all petroleum products reversed the upward trend of the preceding two months and resumed the downward trend during the month of January, 1932, declining by some 1,353,000 bbl. The stocks of motor fuel increased seasonally, though they apparently had been stabilized by the end of February at about 48,000,000 bbl.

Domestic consumption of motor fuel in January, 1932, increased 2.5 percent over same month in 1931. Exports of motor fuel dropped 30.3 percent in the same period of time, resulting in a net decline in the demand for motor fuel of 2.4 percent.

In early March, 1932, refinery runs reached record low of 1,968,000 bbl. per day (A.P.I.). The Mid-continent refineries reduced their daily runs most, operating at 44.3 percent of their capacities in Oklahoma, Kansas and Missouri, and at 54.2 percent of their capacities in Texas.

Prices

REFINERY gasoline prices increased during the first half of March. Quotations on March 20 were 3½–3⅝ cents per gallon for 58–60 U.S.M., 57 octane rating, in Group 3 (Oklahoma) market; 57 to 64 octane rating gasoline (U.S.M.) commanded 4⅛–4¼ cents per gallon and 65 and above octane rating grade was quoted at 4⅜–4½ cents per gallon. The increasing demand for higher anti-knock grades was further emphasized by the Ethyl Gasoline Corporation on March 1 in its new specifications, when the minimum octane number for ethyl grades was raised from 74 to 78. Gulf Coast prices for export remained steady, the 58–60 U.S.M., bringing 4⅛–4¼ cents per gallon. Much more attention was being paid to anti-knock ratings in the export gasoline trade.

On March 23 the Continental Oil Company announced an advance of 15 cents in crude prices effective April 1. Prices will then range from 76 cents for 29 gravity oil to $1.00 for 40 gravity and above. By the end of the week Barnsdall and Sinclair had met Continental's price advance and other companies are expected to follow shortly.

Natural gasolines increased slightly in price, being quoted at 1⅝–1¾ cents per gallon for grade 26–70 (former AA).

The satisfactory statistical position of the oil industry, the assurance of controlled crude oil supply, the radically

World Oil Production—Official Figures

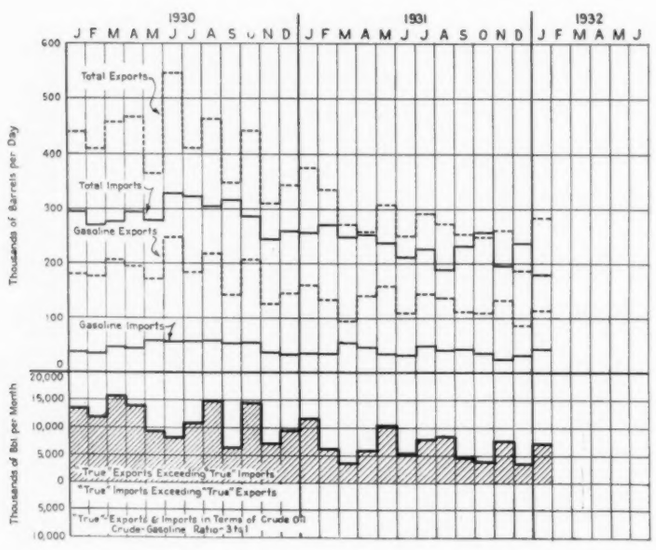
All figures furnished direct to WORLD PETROLEUM by Governments, except where otherwise specified

(Figures in U. S. barrels — Conversion ratio 7 bbl. = 1 ton)

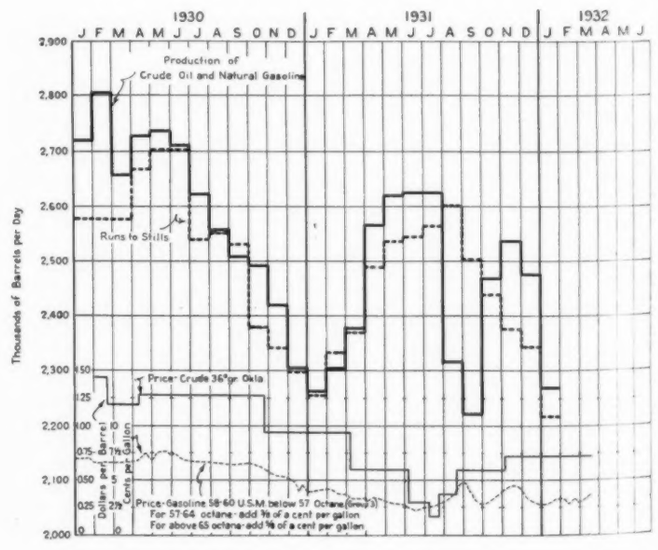
Country	Total 1931	Daily Av. 1931	January 1932	February 1932	Daily Av. 1932
United States	850,275,000	2,329,521	66,884,000	61,889,000[3]	2,147,000
Russia	156,342,900	428,957	13,059,900	12,194,000	420,890
Venezuela	120,069,462	528,337	9,939,027	9,469,873	326,482
Roumania	46,333,945	123,510	3,780,000	3,750,000[1]	121,000
Persia[2]	40,149,977	126,942	3,228,780	2,834,090	112,000
Mexico	33,038,853	90,517	2,869,177	2,761,064	93,837
Dutch East Indies	32,818,346	89,913	3,943,147	3,652,432	126,593
Colombia	18,237,190	49,965	1,533,969	1,401,554	48,925
Argentina	11,713,049	32,091	1,116,800	1,040,000	37,200
Peru	10,102,116	26,722	960,500	960,500[1]	32,000
Trinidad	9,753,792	32,086	846,878	828,860	27,929
British India	7,830,101	21,452	700,000[1]	700,000[1]	23,300
Poland	4,397,760	9,146	351,365	324,100	11,256
Sarawak	3,338,472	12,049	210,784	200,102	6,848
Japan and Taiwan	2,342,500	6,418	195,000	195,000	6,500
Egypt	1,845,938	5,057	138,796	137,431	4,604
Ecuador	1,750,633	4,796	126,406	111,361	4,190
Canada	1,583,339	4,338	96,912	90,841	3,130
Germany (incl. Thuringia)	1,778,602	4,873	148,197	150,197[4]	4,973
Iraq	1,200,000	3,290	100,000	100,000	3,333
France	512,862	1,405	46,000[1]	46,000[1]	1,532
Sakhalin (Russian)	Incl. with Russia	.....	.....	.....	.....
Sakhalin (Japanese)	Incl. with Japan	.....	.....	.....	.....
Others	338,700	928	36,000	36,000	1,200
	1,355,753,537	3,727,903	110,311,638	102,872,405	3,566,746

[1] Estimate. [2] Anglo-Persian Oil Co. figures revised; fuel oil returned to the ground has been deducted.
[3] A. P. I. [4] No production in Thuringia January 13 to March 10.

Total petroleum exports in relation to imports; gasoline imports and exports; and true exports exceeding true imports.


1930
1931
1932
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
Total Exports
Total Imports
Gasoline Exports
Gasoline Imports
Thousands of Barrels per Day
"True" Exports Exceeding "True" Imports
"True" Imports Exceeding "True" Exports
"True" Exports & Imports in Terms of Crude Oil
Crude-Gasoline Ratio 3 to 1
Thousands of Bbl per Month

Production of crude and natural gasoline and runs to stills in relation to crude oil and gasoline prices.


1930
1931
1932
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
Production of Crude Oil and Natural Gasoline
Runs to Stills
Thousands of Barrels per Day
Price Crude 36° or Okla.
Dollars per Barrel
Cents per Gallon
Price Gasoline 58-60 U.S.M. below 57 Octane
For 57-64 octane add ⅛ of a cent per gallon
For above 65 octane add ⅛ of a cent per gallon

reduced runs to stills, the low gasoline stocks held at this time by jobbers, and the beginning of the motoring season—all those factors point to an early increase in motor fuel prices to around 6 cents per gallon, and a corresponding increase in crude oil quotations to around $1.10 per barrel for 36 deg. Be Oklahoma crude.

Rusk-Gregg—East Texas

In conformity with the Texas Railroad Commission order establishing the maximum allowable production from the East Texas field at 325,000 bbl. per day the per well per day allowance for the second half of March was reduced to 72 bbl. At the current rate of new completions in the field the per well per day allowance will be gradually cut to 70 bbl. during the first half of April, to 68 bbl. during the second half of April and to 66 bbl. during the first half of May.

At the close of March there were in the Rusk-Gregg field 4,600 producing wells, while locations and completions averaged at a rate of about 80 per week. The cumulative recovery of the field reached 135,000,000 bbl. by April 1, or an equivalent of 1,350 bbl. per acre of its proven area.

The continuous large number of new wells in the East Texas field, from 80 to 90 each week, has caused several large oil companies much concern, because of the ever increasing initial investment and consequent reduction of the net profits. Several plans have been suggested to prevent further staking of a large number of new locations. Fundamentally there are two factors which are responsible for the largest percentage of new projects: (1) the presence in the field of some as yet undrilled leases, which must be drilled, and (2) lease offset obligations as a result of the first factor, and also due to previous wells already completed. It is estimated that fully 75 percent of all new starts come under these two requirements and any reduction of this type of drilling is practically out of question. The balance of new projects is started by companies desiring to have more production on some of their larger leases, such drilling also being considered an economic necessity.

The Texas Railroad Commission in its order of February 25 has set certain rules for preventing unwarranted drilling, practically the same rules having existed under the martial law control of the field. This order reads in part:

(a) Rule 37, adopted November 26, 1919, is hereby amended in so far as it applies to the East Texas Field so as to read hereafter as follows: No well shall hereafter be drilled for oil or gas at any point less than 660 ft. from any drilling or completed well, and no well shall hereafter be drilled for oil, or gas at any point less than 330 ft. from any property line, provided, however, the commission, in order to prevent waste or to protect vested rights, will, after hearing, grant exceptions permitting drilling within a less or shorter distance than hereinabove prescribed, upon application duly filed fully stating the facts, notice of such application and hearing having been first given to all adjacent lessees affected thereby; provided, that if all adjacent lessees affected thereby waive in writing, notice of hearing on or objection to the granting of said application, the commission may proceed to determine such application without hearing; (b) Any owner or owners of an oil, gas or mineral lease, covering a tract or tracts of land of the same fee title of 20 acres or less, shall not drill more than one well for oil or gas on said tract or tracts of land, and such well shall be properly spaced according to section (a) hereof. Exceptions may be granted as in section (a) hereof or to meet forced offsets; (c) Any owner or owners of an oil, gas or mineral lease, covering a tract or tracts of land of the same fee title of 20 acres or more, shall not drill more than one well for oil and gas on each 20-acre part or unit thereof and such well shall be properly spaced, according to section (a) hereof. Exceptions may be granted as in section (a) hereof, and to meet forced offsets.

The above ruling thoroughly covers the subject of eliminating the unnecessary drilling and any further legislation to reduce new wells is considered as highly improbable, and probably unconstitutional.

A careful study of the present distribution of wells in the Rusk-Gregg field would indicate that the present rate of new locations will continue throughout the Spring, as there is still a large number of unavoidable locations. Thus by June 1 the Rusk-Gregg field may be expected to have 5,250 wells, while the eventual total may exceed 7,000, or an equivalent of one well to 14.3 acres. The total investment in drilling and equipping the 7,000 wells will approximate a staggering total of $200,000,000, or an equivalent of 40 cents per barrel of the estimated total recovery of about 800,000,000 bbl.

Oklahoma City—Oklahoma

A general revision of Oklahoma City pool proration has been recommended by Ray M. Collins, umpire, and a committee of five, and is expected to be adopted shortly by the State Corporation Commission. The new order would distribute the allowable as follows:

(a) lime wells—the allowable remaining as at present, about 3,500 bbl. per day total; (b) sand water wells—those making 3 percent or more salt water, the allowable to be 1.25 bbl. per 1,000 bbl. of the net field outlet, with no other allowance; (c) minimum wells—being those outside the lime zone and not classified as water wells, the allowable to be 0.5 bbl. per 1,000 bbl. of the net field outlet with no other allowance, and (d) potential wells—those not otherwise classed and whose allowable will be based on percentages as fixed by the Commission; these latter wells will be required to take potentials periodically, every 6 months, the next period to be June 1.

The current allowable of the Oklahoma City field is 105,000 bbl., from a total of 850 wells. Gradual increase in the allowable is anticipated with the advance of the motoring season, production for the Summer of the current year possibly being allowed to increase to 150,000 bbl. per day.

Barton Arch—Western Kansas

Gypsy Oil Company (Gulf) No. 1 Steckel in section 31—T 19 S—R 10 W, 2½ miles northeast from the Isern pool, was showing for a 700 bbl. producer from 3,299 to 3,316 feet, in the Arbuckle limestone, thus opening a new field. (Reviewed, March issue of World Petroleum.)

The potential production of the Barton Arch oil fields is currently estimated at 31,500 bbl. per day from 31 wells, 7 of them being completions of last month. The total is divided as follows:

Schurr field	12 wells		12,000 bbl.
Stratman	4	(3 recent)	5,250 bbl.
Stoltenberg	3	(1 recent)	2,200 bbl.
Richardson	2	(1 recent)	3,600 bbl.
Isern	2	(1 recent)	1,000 bbl.
Others	8	(1 recent)	7,450 bbl.

The Western Kansas area continues very active, and it is anticipated that the coming Summer will witness its development on a large scale.

Basil B. Zavoico

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South America

Difficulties resulting from the foreign exchange situation in Chile and the obstacles placed in the way of petroleum companies transmitting their collections out of the country led to the proposal of a Government measure rationing gasoline and permitting its use only by those vehicles that are considered essential. The two companies, West India Oil, subsidiary of the Jersey Standard, and Shell-Mex., announced a price increase of 25 percent as a result of these difficulties and precipitated a strike of bus operators in Santiago on March 17. The matter was temporarily settled when President Montero induced the petroleum companies to postpone their price increase. It is expected that the Chilean Congress will be called upon to consider a bill fixing the maximum price that can be charged for gasoline.

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A bill to create an oil monoply in Peru, including the construction of refineries, is now being considered by the Peruvian Congress. Under this bill the oil companies now operating in Peru will be compelled to surrender their properties.

RUSSIA

Production

Official Figures of Soviet Oil Operations*

1932	Crude Production (bbl.)	Daily Average (bbl.)	Run to Stills (bbl.)	Drilling (ft.)
January.....	13,059,900	421,300	11,927,882	152,532
February.....	12,194,000	420,482	11,428,900	193,185

Crude Oil Production in Barrels

Revised quota for 1932—191,800,000 or 525,400 bbl. daily average

* Crude oil conversion ratio; seven bbl.—one ton.

IT appears that no improvement in crude production has taken place in Soviet Russia during February as almost all oil fields were stormbound and in the grip of bitterly cold weather. The major oil fields are behind the quota for the month and also slightly behind the production figures for the corresponding number of days of the preceding month.

Crude production of the Grozni oil fields during February amounted to 4,470,000 bbl. Most of the fields were suffering from weather conditions and the entire gaslift system was frozen. The arrears of some of the fields amount to about 15 percent of the plan. Refining operations of Grozni and Tuapse were handicapped by difficulties of transportation and run to stills are behind the plan. Only production of kerosene for the month was up to plan. Gasoline production is five percent below plan and all other products are behind the quota for the month. At present the tanks are filled with tractor fuel to capacity and lack of storage facilities is threatening normal plant operations.

The Baku oil fields show for the month of February crude production of 6,827,900 bbl. which is 93.5 percent of the plan. The production arrears of some of the Baku fields run as high as 12 to 15 percent of the plan. The arrears in general are due to the fact that 10 gushers had unexpectedly stopped production and no emergency equipment was to be had in order to adjust the wells for mechanical production. In addition to this about 35 wells at Surakhani showed signs of water and 50 wells which were completed during January could not be put into operation owing to lack of compressors, pumps, tractors and other equipment. Of 4,130 wells in operation at present in the fields of Baku, 3,325 wells or 80 percent are adjusted for deep pumping. Cable advice from Baku to the central organization at Moscow states that deficiencies of organization, low quality of the technique and slow drilling are the main factors which are responsible for production arrears. The situation is bound to become serious as the Baku fields are required to produce in 1932 about 70 percent of the total crude in light oil for which purpose lower horizons at a depth of 6,000 to 7,000 ft. will have to be drilled in the immediate future and for such drilling there is at present neither adequate equipment nor trained labor. Drilling equipment which is being built by domestic plants is not fit for the task owing to the fact that drilling below 3,500–4,000 ft. requires high quality outfits for heavy duty. Swivels and hoists have to hold 150–200 tons of casing pipe and other drilling tools, and two speed rotary outfits have to be replaced by four speed units. Another factor which causes trouble in drilling is the selection and preparation of the right mud liquid solutions which is known to give the walls of the well the right shape and prevent crookedness. Research laboratories are at present busy testing mud solutions and it is to be expected that plants for the preparation of mud solutions will be erected in Russia shortly.

Notwithstanding all the difficulties the Soviet oil industry has to overcome it is making strong efforts to cut down on imports of oil equipment from abroad. Already in 1932 a large part of the equipment such as swivels, hoists, rotary table pumps and other tools have been manufactured in Soviet Russia. Still greater efforts will be made during 1932 to live up to the ambitious plan to manufacture 100 percent of all required equipment in Soviet Russia. The Baku Machine Combine has received orders to build 60 mudpumps, 42 reduction outfits, 100 rotors, various gusher equipment and 4 speed hoisting drums on ball bearings for an aggregate sum of about 2,500,000 Rbl. The Baku Machine Combine which is lacking the necessary experience for building heavy duty and high quality equipment may have difficulties in bringing out adequate tools particularly because of lack of raw materials. No orders however will be placed in the United States except for measuring instruments for cracking and some other equipment for pipe stills. At the end of 1932 all importation will be prohibited.

Exploration

A WILDCAT well with an initial flow of 1,000 bbl. per day was recently brought in in the region of Lokbatan showing an extremely high gasoline content. This was followed on March 18 by a well with an initial flow of 14,000 bbl. per day in the same region. Oil, which has the same high gasoline content, was struck at 11,000 ft. Other wells are being drilled and extensive geological research has been undertaken in this entirely new region said by the geologists to possess sands fully as saturated as those of Surakhani.

A gusher flowing 21,000 bbl. per day has just been brought in in the Nefpag field in the Turkmannstan district. Three other wells recently drilled have also increased production and show indications of increasing flow and pressure. In fact one of them has suddenly turned into a powerful gusher which as yet has not been controlled and 700,000 bbl. have already flowed into trenches and into lakes. Lack of pumps, pipes, tractors and other equipment is preventing the well from being controlled. Railroad transportation can handle only twenty cars per day whereas 300 cars are needed. It is reported that the Azneft will go to the rescue and loan equipment.

Transportation Improvements

ACCORDING to the quota of the Second Five Year Plan the Baku fields will have to produce in 1937 about 280,000,000 bbl. of crude oil. In view of the possible improvement of the refining methods and considering the fact that natural and synthetic gas will in the future replace all fuel requirements of the oil industry it is to be expected that 97.5 percent of the crude or 273,000,000 bbl. will have to be transported from Baku in the form of crude and refined products. Some 63,000,000 bbl. of crude will be directed to Batum. The balance will be transported north of Baku. Only 7,000,000 bbl. will be carried by rail and 210,000,000 bbl. of oil will have to be transported by the Volga Caspian tanker fleet. The present tanker fleet is unable to cope with the quantities required for transportation from Baku to Astrakhan which is evident from the fact that only 41,000.000 bbl. of oil were carried by the Volga Caspian tanker fleet during the 1931 navigation season while the total to be carried amounted to over 60,000,000 bbl. of oil. Domestic shipbuilding plants of Russia are building now nine oil tankers for the Volga Caspian fleet of which five are expected to be ready by 1933 and the other four by 1936. At the end of 1936 the carrying capacity of this fleet will amount of 98,000,000 bbl. of oil and no facilities will be available for the trans-

portation of the remaining 112,000,000 bbl. In order to overcome this discrepancy two alternatives have been suggested: To initiate at once a building program including 40 instead of nine tankers which would involve an expenditure of about 160,-000,000 Rbl. The second alternative consists of a plan to reorganize and rebuild completely the transportation system of the Volga Caspian tanker fleet. The main sea terminal would be transferred to Agrakhan Bay about 30 miles north of Baku and below the freezing line of the Caspian sea. This would enable the fleet to operate all year instead of seven months as at present and would increase the carrying capacity about 35–40 percent. The building of the new oil base at Agrakhan would involve an expenditure of approximately 70,000,000 Rbl. In addition to this a pipe line between Agrakhan Bay and Stalingrad would be laid for a capacity of about 17,500,000 bbl. of tractor fuel per annum. The distance is about 375 miles and the cost is estimated at 50,000,-000 Rbl. The oil terminal of Baku proper would have to be transferred to the northeastern extremity of the Apsheron peninsula about 18 miles from Baku. This would improve the accessibility of the terminal, as the various islands situated near Baku which obstruct the passage could be avoided, and would increase the fleet capacity by another 20 percent. The terminals of Makhach Kala and Krasnovodsk would be enlarged so as to enable unhindered transportation of the required oil products of Middleasia during the rush of the five winter months.

It is expected that measures will be taken to speed the promulgation of the reorganization plan with a view to having the work completed by 1936. The Azerbaijaan oil combine in conjunction with the navigation department of the Caucasian Republic are to start shortly the preliminary survey of the points for the terminal and pipe line.

1932 Quota

REVISED quota calls for crude production of 191,800,000 bbl. representing an 18.6 percent increase over actual production of 155,344,000 bbl. in 1931.

Planned 1932 Crude Production

Oil trust	Barrels	Percent of total
Azneft	112,560,000	58.5
Grozneft	63,200,000	33.0
Maikop	10,200,000	5.3
Middleasia	820,000	0.4
Emba	2,570,000	1.4
Sakhalin	2,100,000	1.2
Turkman	350,000	0.2
	191,800,000	100.0

Run to stills during 1932 will amount to 162,855,000 bbl. of which 97 percent will be operated by the major oil trusts. The increase in 1932 over 1931 will amount to 17 percent.

Increase of Production in 1932 over 1931

Product	Percent increase
Straight run gasoline	26.0
Other gasoline	31.0
Cracked gasoline	53.0
Ligroin	25.0
Kerosene	18.0
Lubeoil	65.0
Average	23.0 percent

In order to attain to such ambitious results efforts will be made to make deeper cuts from crude, elimination of evaporation losses and rigorous economies in fuel consumption.

Domestic consumption in Soviet Russia is expected to increase considerably during 1932 and an accompanying table shows a comparison of consumption of the major white products during the last two years and the expected 1932 consumption.

Consumption of White Products in Soviet Russia

	1930	1931	1932
Gasoline	2,055,000	3,590,000	8,050,000
Ligroin	915,000	1,552,000	2,515,000
Kerosene	5,115,000	9,320,000	17,600,000

The total capital appropriations for 1932 will amount to 375,000,000 Rbl. of which the following sums have been allotted to the individual trusts:

Capital Investment of the Oil Industry in 1932

Azneft	150,000,000 Rbl.
Grozneft	57,000,000
Maikop	30,000,000
Emba	19,000,000
Sakhalin	19,200,000
Vostokneft	12,000,000
Middleasia	13,000,000
Turkmanneft	4,000,000
Gruzneft	5,300,000
Plants of inner region	37,000,000
Nefttorg	15,000,000
Research Institutes	5,860,000
Other expenditures	7,140,000
	375,000,000

Research in 1932

A NUMBER of entirely new oil locations were discovered during 1931 in the regions of Biadavani, Pirgasat, Hidirli, Kitchik bul-bul and other places. A total of 500 wells were drilled in these regions. New regions which will be explored will cover the Caspian-Kubinsk area, Kabristan, Shemakha, Shiraki, Shemakha minor, the Prikurinsk valley, the Caucasian minor northeastern promontory, the Lenkon region, Apsheron and the Baku straits. Geological exploration will also be conducted on the left side of the Prikurinsk valley and the Mujansk steppe which is the right bank of the Kama river. About 14 wells were drilled in the Georgia oil regions during 1931.

The plans for 1932 cover geological research in the regions of Mirsaan, Shiraki Minor, Melesh Kheva, Guria, Kila Kupri. Ildokani, Gurdsami, Navitlug and Phovelle, where 50 deep wells will be drilled in wildcatting.

Exploration of the Turkman regions will cover the fields of Neftedag, Cheleken, Boyadag, Chikinshlar, Keimur and other regions.

Middleasia explorations will be confined to the field of Ferghana where a number of wells will be drilled.

Several geophysical expeditions will be sent to explore the formation of the shore lines along the Caspian sea between Dagestan and Baku and further up the Prikurinsk valley. Research will also be conducted to study the formations of the Caspian sea bottom along the lines which stretch between the Bay of Manich-Mangishlak and the Apsheron peninsula—Krasnovodsk and also further south.

J. WEGRIN

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Roumanian Exports

January to June 1931
Final Official Figures[1]

Country	Gasoline	Kerosene	Gas Oils	Lubricants	Fuel Oils	Crude	Total First 6 months 1931	Percent Change from 1930
England	2,226,737	946,955	382,340	37,821	366,772	18,529	3,979,154	+77
Egypt	244,418	1,374,671	254,290	41,034	632,184		2,546,597	+73
Italy	384,838	424,469	363,112	47,635	1,043,420		2,263,474	−6
France	1,492,362	252,735	470,134	6,776	114,142		2,336,149	+97
Spain	726,886	84,028	275,424	21,812	243,229		1,351,379	+1320
Germany	468,223	72,640	6,254	28,602	28,294	2,093	606,106	−24
Greece	74,069	27,977	268,189	9,688	20,664		400,587	+21
Belgium	174,658	58,188	174,048	105	58,751		465,750	+294
Hungary	147,169	241,889	23,681	2,177	107,037	36,827	558,780	−22
Austria	393,151	102,214	44,301	5,859	66,094	42,007	653,626	−29
Yugoslavia	60,520	105,539	34,056	350	38,262	125,692	364,419	−22
Czechoslovakia	178,585	37,781	6,452	2,038	38,766	46,844	310,486	−27
Bulgaria	30,923	46,345	76,532	14,476	6,580	1,365	176,221	−15
Sweden	60,036	11,152	2,835		91,658		165,681	——
Turkey	39,279	41,114	29,861	14,707	1,001		125,962	−11
All others	228,372	129,394	37,985	10,752	10,941		417,444	−21
Naval uses	41,310	49,600	224,147	10,710	742,861		1,068,628	−21
Total	6,971,536	4,006,691	2,673,641	254,569	3,610,656	273,357	17,790,425[2]	+32

[1] Official figures given in metric tons converted as follows: gasoline, 8.5 bbl. per ton; kerosene, 7.75 bbl. per ton; gas oil, 7.6 bbl. per ton; lubricants, fuel oil, and crude oil, 7 bbl. per ton.

[2] In addition Roumania exported 22,062 tons of paraffin and 16,973 tons of asphalt.

MEXICO

Kessler Plan

THE plan for solving world petroleum industry problems formulated by J. B. Aug. Kessler, managing director of the Royal Dutch Shell interests, which was published in the March issue of WORLD PETROLEUM, is criticized by Lawyer Primo Villa Michel, subsecretary of the Ministry of Industry, Commerce and Labor. In a statement issued to the local press, Villa Michel declares that such problems cannot be solved by any plan that has as its basis the safeguarding of the private interests of the petroleum companies.

"In my opinion, the problems of the world petroleum industry cannot be satisfactorily solved by any plan that has as its basis the exclusive safeguarding of the financial interests of the companies which exploit this source of public wealth, and which does not take into consideration the vital national interests of the oil producing countries," said Lawyer Villa Michel.

"Mr. J. B. Aug. Kessler, managing director of the Royal Dutch Shell group, some time ago published in WORLD PETROLEUM a plan for solving the problems of the world petroleum industry, which was fundamentally that the producers of the United States, Roumania and Venezuela agree to obtain from their respective Governments a prohibition of drilling new wells when the production in their respective countries exceeds the amount stipulated as minimum production for the same, establishing, instead, a compensation of 40 cents for each barrel of the 220,000,000 bbl. in which the 'declared over production' is estimated.

"In cable dispatches published by local newspapers, it is indicated that the prominent petroleum man has introduced modifications in his original plan, at least in regard to the countries that would participate in the execution of his proposition. However, because of lack of details of Mr. Kessler's plan as announced by these press dispatches, it is impossible to advance an opinion. Nevertheless, I contend that world petroleum industry problems cannot be solved by any plan that has the private interests of the producing companies as its exclusive basis."

This statement is lauded in an editorial of EXCELSIOR, a leading local daily newspaper, which remarks:

"This opinion could not be more correct and more true to reality, because, at least in Mexico, we know only too well how certain petroleum companies act, for whom all principle of morality is despicable if it is an obstacle to their purposes, and therefore they do not care anything at all about the benefit of the country, but are only alive to their own profit, which is ofttimes boundless."

Pipeline Dynamiting

BLAME for the two dynamite attacks against the pipeline the Mexican Eagle Oil Company (Royal Dutch Shell group) recently established from Palma Sola, Vera Cruz State, to its refinery at Atzcapozalco, Federal District, near here, is laid to "Black Hand" organizations by company private detectives and inspectors from the petroleum department of the Ministry of Industry, Commerce and Labor. Comparatively little damage was done by the first of these attacks but the second was of more serious proportions as considerable tubing was wrecked and a portion of the tracks of the National Railways of Mexico branch between here and Pachuca, capital of Hidalgo State, destroyed.

The inspectors and detectives base their conclusions that "Black Hand" gangs and not dismissed employees are to blame for the outrages on the fact that several anonymous letters demanding large but unrevealed sums under threat of further attacks if the demands are not met, have been received by the company's local offices.

Gangs operating here and in the Huasteca region, Vera Cruz State, are doing big business by stealing metallic tubing of pipelines owned by petroleum companies that have withdrawn from Mexico and selling the spoils to local factories and foundries on the American border, charges the local newspaper, EL UNIVERSAL GRAFICO. Companies' losses are estimated at from 5,000,000 to 6,000,000 pesos (about $1,650,000 to $2,000,000, U. S.), and the robberies are said to be the result of deficient police service in the area.

Petroleum circles discount the loss caused by this looting but deem it runs into the hundreds of thousands of pesos, rather than millions. Agents of some of the victimized oil companies have complained to the military authorities of Vera Cruz State. Several arrests have been made, but the thefts are continuing.

Vera Cruz Exploration

MUCH importance is attached by the Ministry of Industry, Commerce and Labor to exploration work in Vera Cruz, that will be undertaken by the Penn Mex Fuel Company. It is expected that this work will reveal new and rich petroleum fields. The seismograph will be employed in the work which will be done on properties known as Las Cañas, Guadalupe and Palo Blanco.

Taxes

IN view of the fact that the new Federal tax laws provide an annual levy of 20 centavos (about 6½ cents) the hectarea on petroleum lands, the Ministry of Finance has in project a measure stipulating as penalty for non-payment of this impost cancellation of ordinary concessions covering such lands and auction of such properties operated under confirmatory concessions. The Ministry also proposes to oblige holders of concessions to such lands, or their agents, that had been granted up to December 31 last, to state to the Ministry the amount of lands they control and designate Ministry tax collection offices at which they desire to pay this levy.

Prominent petroleum and other industrialists have signed a petition to the Minister of Industry, Commerce and Labor protesting against the bill now before the United States House of Representatives providing a one cent per gallon tax on imported petroleum. The petition urges Federal authorities "to take whatever steps they may deem necessary to prevent passage of the proposed bill." Effects of a tax on petroleum exported to the United States on the general economic and unemployment situation in Mexico are considered of considerable importance.

EXCELSIOR, leading Mexico City Daily, suggests as a retaliatory measure against the proposed U. S. tax on petroleum imports, a prohibitive tariff against motor fuel shipped from the United States. Development of the domestic refining industry would supply domestic requirements for gasoline in a short time after the enactment of the Mexican tariff. EXCELSIOR'S editorial is an indication of the strong feeling that prevails in Mexico in relation to the proposed tax in the United States.

Natural Gas Service

HUASTECA Petroleum Company (Standard Oil of Indiana) and the Mexican Eagle Oil Company (Royal Dutch Shell) are interested in establishing natural gas public services, according to a statement by Gen. Abelardo L. Rodriguez, Minister of Industry, Commerce and Labor. The Minister declares that negotiations for using the company's Tampico refinery and gases it produces and those from wells in the region, for establishing a public service natural gas enterprise that would extend from Tampico to Monterrey

and other cities on the American border, have been entered into with him by William Green and C. B. Hollinger, president and vice-president, respectively, of the Huasteca Petroleum Company.

Minister Rodriguez says that the Mexican Eagle Oil Company is considering establishing a similar service in connection with its Atzcapotzalco refinery for the Federal District and other parts of Central Mexico.

Chapacao Concession

MEXICAN Petroleum Company, subsidiary of the Huasteca Petroleum Company has just obtained a confirmatory concession to what is considered one of Mexico's richest potential fields. The concession covers some 60,000 hectareas in the Chapacao tract, Panuco District, Vera Cruz and was obtained prior to 1917 as the company purchased the land in 1901. The company sought confirmation of the concession in 1927 and received it in February, 1931. Since then, however, numerous suits were active in various district courts which have delayed the confirmatory concession until the present.

DOUGLAS GRAHAME.

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CANADA

Imports

IMPORTS of crude in January of this year showed a substantial increase over December, being 2,077,961 bbl. compared with 1,766,797 bbl. The month was characterized by relatively heavy shipments from South America; 687,282 bbl. having originated from Peru and 218,657 bbl. from Venezuela. Gasoline imports showed a further decline, being 61,124 bbl. compared with 109,927 bbl. in December, and 114,138 bbl. in January 1931.

Plant Developments

PLANS of Joseph Elie, Limited, large fuel dealers of Montreal, contemplating the construction of an oil refinery in Montreal East at a cost of $1,000,000 are reported to have advanced to the point where land situated on Sherbrooke Street east, just outside of the city of Montreal, has been acquired. The property is in close proximity to the oil refineries of the British American Oil Company Limited. It is stated that the Foster Wheeler Corporation who received the contract, are working on plans for the refining plant, the capacity of which has not been definitely determined. Construction is scheduled to begin in the near future.

Announcement is made by John E. Jones, Commissioner of Industries for the Welland Canal area, that negotiations have been completed with the McColl-Frontenac Oil Company, Limited, for the erection of a bulk storage plant in Thorold Township on the Thorold-Allenburg highway and the Canadian National Railway.

The plant will have a capacity of 20,000,000 to 30,000,000 bbl. There will also be a five-truck garage and a warehouse. Cost of the plant will be from $60,000 to $70,000, and 10 to 15 will be employed, it is said.

Merger

CONSOLIDATION of the Canadian interests of the General American Tank Car Corporation with the Canadian Tank Car Company has been announced by officials of the American corporation. While details of the merger and election of officers have not been completed, headquarters of the merged companies, which will be known as the Canadian General Transit Company, Limited, have been established in Montreal.

The Canadian Tank Car Company was organized last fall by the Canadian Car and Foundry Company, Limited, to specialize in the leasing of tank cars of all types, following a ruling by the Railway Commission of Canada that tank cars should not be supplied by the carriers. General American Tank Car has participated in the Canadian transportation field for several years.

Increased Gasoline Taxes

PROVINCIAL Government budgets brought down to date show increases in gasoline taxation in various parts of the Dominion. In British Columbia the tax has been increased from five to seven cents, in Ontario from five to six cents, and in Quebec from five to six cents. In British Columbia a tax of one half cent per gallon has been imposed on fuel oil. This legislation has been the subject of a good deal of bitter opposition both on the part of the oil companies, who point out quite reasonably that excessive taxation automatically aggravates the law of diminishing return, which is the greatest problem that business, as a whole, has to face during these times, and on the part of consumers, who point to the ever increasing burden being imposed upon motorcar owners. It is pointed out that the income from motor licenses, and gasoline tax to the Province of Ontario, for instance, has increased from $9,791,803 in 1926 to $16,960,780 in 1931.

Government Distribution

A SOMEWHAT dangerous precedent is in process of establishment in Newfoundland where it is proposed that the Government shall handle the distribution of petroleum products. This idea was mooted in the Province of Quebec early in this year, but was immediately dropped in the face of a storm of criticism. In a bill introduced in the Newfoundland House of Assembly, it will be unlawful for any interests, other than the Petroleum Products Board, to import any petroleum products, save under Government license. License holders must pay a royalty of not less than a sum which, when added to the landed cost per gallon, will amount to the wholesale price as determined by the Governor in Council. The Government proposes to raise a loan of $2,500,000, of which $300,000 will be used for acquiring and equipping a plant and buildings for handling petroleum. Viewed superficially, it appears that this legislation is not designed so much with the object of giving the consumer lower priced gasoline as it is with providing the Government with an extra source of revenue. When the proposal of Government distribution was brought forward in Quebec, it was based upon the idea of eliminating the competition and useless duplication of service stations, which is such a heavy factor in higher gasoline costs in Canada.

Government Price Inquiry

THE House of Commons Committee on Banking and Commerce, which is investigating the price of gasoline in Canada is still sitting, and has to date brought out the fact that profits on gasoline to Canadian companies are not excessive, being as low as 1.01 cents per gallon.

R. C. ROWE.

SHIPPING

London: March

THERE has been in the last few weeks a spurt in tanker completions, or at least what passes for a spurt in these times of depression. The most important among the launchings is that of the large tanker R. L. HAGUE at the Monfelcone Shipyard of the United Adriatic Shipyards Ltd. Special attention attaches to this launch because it was attended by Mr. Hague in person, the launch being conducted with much ceremony. The new vessel is a twin screw 16,000 tonner and is the third ship which Monfelcone has built for the Standard Shipping Company.

The LAKESHELL, 2,750 tons d.w., 260 ft. length, 43 ft. 6 in. beam, with a draft of 15 ft. 3 in. was launched at Newcastle-on-Tyne on March 19. The tanker, which will be the largest tanker on the Great Lakes was built to the order of Dominion Tankers Ltd. of Toronto. She is expected to make 10 knots and is equipped with steam propelling machinery.

The Spanish petroleum monopoly continues to take delivery of units of a large fleet now under construction. These are mostly 10,000 tonners, built under the superintendence of Sir Joseph Isherwood's London Office and, of course, on the Isherwood system of construction. All of the ships in the fleet are motor vessels, some having Danish engines while the others are fitted with German engines. There are still three 8,000 tonners building for this company, two at Cadiz and one at Valencia. Of the remaining launches and completions, two (built in Scandinavia) are for Scandinavia tramp tanker owners, while a third is being built at Copenhagen for French owners. These ships may all be regarded as the rearguard of the big group of tonnage placed at the height of the tanker boom about 18 months ago. The market is devoid of enquiry for new tonnage at the moment.

Tankers Recently Launched and Completed

Name	Owner	Total Power	Remarks
PRESIDENT HERRENSCHMIDT	Skibsaktieselskapet Dalfonn, Stavenger	3,700 B.	Launched Feb. 30th
R. L. HAGUE	Standard Shipping Co. of New York	2,250	Launched
EIDSVOLD	A/S Eidsiva, Oslo	2,800 I.	Launched
CAMPIADOR	Spanish Petroleum Monopoly	3,200 B.	Launched
CAMPAS	Spanish Oil Monopoly	3,200 B.	Trials
CAMPOMANES	Spanish Oil Monopoly	3,200 B.	Trials
LAKESHELL	Dominion Tankers Ltd.		Launched Mar. 19

Chartering

TIME charter is practically devoid of enquiry. This applies to all markets at the moment, with the possible exception of dark oil from Black Sea and U. S. ports to Europe. It is also announced that prompt tonnage is being asked for on account of dark oils from Venezuela/Mexico for U. S. ports in anticipation of an import tax being placed on oil coming into the United States. Recent demand for black oil tonnage for Japan has now subsided. Rates are still bad and if anything show signs of becoming weaker than before. For clean oils there has been very little enquiry during the week ending March 19. An 8,000 tonner has been fixed from Russian Black Sea ports to Europe on the basis of 7/-d. An 8,000 tonner secured about 7/9d. for the carriage of gas oil from Russian ports for Europe, and a 7,500 tonner was chartered for two to four voyages between the same ports at a rate of about 7/-d. A steamer of about 10,000 tons was recently fixed on time charter for 12 months to American charterers at 3/9d. for dark oil.

Corrosion in Tankers

NAVAL architects and responsible members of classification societies continue to give close attention to the question of corrosion in tanker hulls. It is hoped that eventually this problem will be solved by the production by one or another of the head manufacturing companies of an ideal resistant medium to all corrosion, and at least one company is able to make strong claims in this connection at the present moment. Chief ship surveyor for Lloyd's Register with one of his principal assistants on the chemical side read a paper on the question of corrosion in merchant ship hulls in Glasgow recently. They suggested that corrosion fell under one or two groups. In the case of tankers carrying animal, vegetable or the heavier mineral oils, the corrosion which occurred, great or small, was confined to the surface of the bottom plating, where it developed in the form of irregular pits and grooves. In tankers transporting the lighter petroleum distillates, while such pitting and grooving on the bottom occurred, the predominant wastage took place in the upper portions of the tanks—that is, the decks forming the top of the tanks, the expansion trunks, and in those members which project into the oil space. Contrary to general opinion, the oils or molasses, being non-conductors of electrical energy, had no action upon the steel. This was proved by an experiment which consisted of immersing bright strips of this metal in these liquids for protracted periods, when no ascertainable change in the surface of the metal was observed. The admixture of an electrolyte, however, either acid or neutral, such as dilute sulphuric acid or sea water resulted in corrosion. Thus, while the nature of the cargoes carried might considerably modify the corrosive effects, the corrosive action must be due to the presence of an electrolyte in immediate contact with the tank structure. This might be introduced with the cargo in a state of fluid suspension; result from the condensation of steam or water vapour; or it might be sea water introduced as ballast.

Panama Tanker Traffic

STATISTICS, now available on tanker traffic through the Panama Canal for a typical month last year, show that a total of 51 vessels, with an aggregate of 287,399 tons, on which tolls amounting to $262,568 were paid, passed through the canal. Cargo amounted to 312,763 tons made up of 287,399 tons of mineral oils, 7,650 tons of molasses, and 6,635 tons of coconut oil. In point of net tonnage, tanker traffic decreased 35.5 percent. compared with the corresponding month a year ago, while cargo tonnage declined 31.6 percent. Tank ships comprised 13.2 percent. of the total commercial transits through the canal during December, 1931; made up 14.1 percent. of the total Panama Canal net tonnage; were the source of 14.9 percent. of the tolls collected; and carried 19 percent. of the total cargo through the canal.

Sun's London Office

BRITISH shipbuilders are expressing interest in the decision of the Sun Oil Company to open London Offices, as they are in hopes that this company will follow the example of other petrol distribution companies and order coastwise tankers from a British yard.

Ship Sales

SALES to Japanese shipbreakers continue and during the past month included the OURAL, 2,210 tons owned by Gordon-Firing and sold for less than £4,000; PEARL SHELL, 5,834 tons gross owned by Petroleum Maats, which brought over £7,000; the third tanker was the DRENTE 1,257 tons gross.

A. C. HARDY

Teagle on Oil Problems

(Continued from page 146)

as to permit necessary agreements between operators for cooperative development, or for unit development and operation, of the single pool. In times of over-supply curtailment of production to reasonable market demand, with proper allocation as between States and pools, must also have legal sanction.

To serve the public welfare, conservation agencies must have authority to limit production to market requirements. They must be enabled to apply necessary restrictions to the fields involved and to prorate allowable production between properties in each field. They must also have power to take any necessary steps to prevent physical waste. This contemplates establishment of inter-state committees, or finally an interstate compact, to regulate participation in available markets. It also contemplates proportionate limitations of imports from abroad and statutory provisions in the several States whereby a landowner is entitled by injunction and in damages to protect himself against drainage from his oil sands or dissipation of gas pressure and water lift.

The way to a solution of the problem is through understanding by the public and by the industry that all owners in a given pool are bound together by the character and habits of the oil and gas below ground. It is absolutely necessary that the correlative rights of the owners be adjusted and the general welfare protected through prevention of waste.

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Vapor Lock

(Continued from page 165)

erages of similar values for 1930 give 137 deg. F. for the former and 138 deg. F. for the latter type of gasoline.

Mr. Bridgeman and his associates have further given the average fuel system temperatures for 47 of the 65 standard automobile models on the market in 1931, the data being derived from tests made by the Bureau of Standards. The average rise above atmospheric temperature is given for tests made with the cars operating at a speed of 40 miles per hour, and for tests made with the motor idling after a run at this speed. The accompanying table gives the percent of automobiles that would be troubled with vapor lock, based on the data of the two reports mentioned above.

While the figures in the table represent the percent of cars tested by the Bureau of Standards which would be subject to vapor lock under the conditions specified, inasmuch as Mr. Bridgeman and his associates have pointed out that fuel system temperatures are substantially independent of automobile sales prices, the figures represent, approximately at least, the percent of cars in operation in the various districts that would be so affected.

While vapor lock can no doubt best be remedied from the automotive design standpoint, by proper insulation and removal of heat from the fuel distributing system, in view of the fact that more than 26,000,000 motor vehicles are now in operation in the United States, it would seem that some responsibility is certainly placed on the refiner.

The increase in vapor pressure as shown by the Bureau of Mines report is probably due, in part at least, to the trend toward high temperature and vapor phase cracking with its attendant gas production and to the practice of blending natural gasoline with straight run. This statement should not in any way be construed as condemnatory of these practices. On the contrary, they provide a real benefit to motorists in the form of better anti-knock gasoline, but they do necessitate removal of too volatile materials from the gasoline by stabilization, and careful control of the vapor pressure of the finished product.

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Soviet Entry Into Korean Market

ACCORDING to authoritative sources the Russians are laying the foundation for a marketing plan in Korea with an ultimate view to securing a monopoly. Prior to a Soviet invasion of the Japanese oil market a branch office was established last year at Seoul and agents have been appointed in various towns in the country. The first consignment consisted of 10,000 cases of kerosene which was sold at 330 yen per can or approximately one yen lower than Japanese or American oil. It was reported that the Soviet plan calls for marketing 5,000,000 cans of kerosene and other petroleum products in Korea, and their distributing facilities are divided into three districts, the central district being under the control of the head office at Seoul. The other two districts are handled by agents such as Bunkichi Sakata, Shigeta Momohara, Goro Itsushima, Morita and Yamanouchi.

Late last year arrangements were made by these concerns to form a company with a capital of 100,000 yen with B. Sakata as manager. In this connection negotiations were carried on with M. Beshodlisky, Japanese representative of the Soyouznefteexport and a preliminary contract was concluded.

Gas Pressure Pump

(Continued from page 161)

jack is a case in point. Higher mechanical efficiencies could be obtained by using this gas as a fuel or by the use of an electric drive, but where conditions are such as to warrant the installation of this jack great economies in operation are affected due to the fact that the gas at the required pressure costs little or nothing and is still available at reduced pressures for other uses after having done work in the pumper.

Operating Results

NUMEROUS tests have been made to determine the amount of gas required to operate this pumper under different field conditions but gas-oil ratios given in the accompanying table may be considered safe averages.

Gas-Oil Ratio

Depth of Pump	Cubic Ft./bbl. of Gross Fluid
2500	1000
4500	2000
5500	3000
7500	4000

The following data are taken from a well in the Richfield district where this pumper has been in continous operation for the past eighteen months.

Pumping depth, 4240'
Tubing, 2½" upset
Pump, 2½" insert liner
Length of stroke, 6' 0"
Strokes per minute, 6
M. C. F. Gas per day, 240
Operating pressure, 70 lbs. per sq. in.
Bbls. per day, Gross 40 26.6 grav. 1.1% cut
Production cost before installation of gas pumper, $0.3167 per bbl.
Production cost after installation of gas pumper, $0.1343 per bbl.
No parted rods since installation of jack.
Time to erect jack, 3 days

The cost of this jack compares favorably with other pumping units of equal capacity both permanent and portable. Chart 2 shows the theoretical operating pressure required for 2", 2½" and 3" pumps at different depths.

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A. C. S. Meeting

Papers on "The Design of Rectifying Columns for Natural and Refinery Gasoline," "The Centrifugal in Acid-Treating Petroleum Lubricants," and "Heat Transmission in Pipe Still Convection Sections" are among those which will be read before the Petroleum Section of American Chemical Society at the Society's 83rd annual meeting in New Orleans, La., March 28 to April 1. Papers of interest to readers of WORLD PETROLEUM will be reviewed in a later issue.

FINANCE

Paris: March

AT a recent meeting of the board, the directors of the Franco-Wyoming Oil Company, decided that no half-yearly dividend should be paid on March 10. As the same decision had been taken in September there are no illusions left to shareholders who will shortly be convened to the company's annual meeting.

There is in reality nothing surprising in the attitude adopted by the directors. The Franco-Wyoming Oil Company is exclusively a holding company. The greater part of its investments consists of shares of the Standard Oil Company of New Jersey and of Indiana which have both dropped considerably in value.

It is therefore only natural that an effort should be made by the directors of the Franco-Wyoming Oil Company to amortize the loss in capital by putting aside dividends collected from these investments instead of distributing them.

IT is unofficially announced that the Cia Arrendataria Del Monopolio de Petroleos (C.A.M.P.S.A.) the Spanish State organization for the sale of petroleum products, is to pay a dividend of seven percent for 1931. Five million pesetas are to be put aside for special reserves and 15,000,000 pesetas are to be written off for amortization. Revenue obtained by the State amounts to 210,-000,000 pesetas as compared with 170,-000,000 in 1930. No competition being possible in Spain the State has had a free hand to increase the price of gasoline whenever it deems it necessary to do so.

WITH an optimism which is worthy of admiration the French are still forming new companies for the distribution of petroleum products; they appear quite undaunted by the fact that many companies formed in more prosperous times have already been wound up and have disappeared, and that the same fate is still in store for others. Thus during February and the beginning of March three companies were registered: The Comptoir General des Mazouts, the Cie Française des Corps Gras, and the S.A. Bitumes Ebano. The Comptoir General des Mazouts which was formed with a capital of Fr. 500,000.– divided into 100 franc shares (entirely subscribed for in cash) will distribute fuel oil. Messrs. André Pellicier, René Tatur, Marc Ferraud, Bernot Frères, The Etablissement Jesel and Wideman and the Etabls. Hugounot are among the first directors.

The Société Française des Corps Gras was formed with a capital of Fr. 350,000 and will distribute lubricating oils. Members of the board are Messrs. Charles Roels, Octave Décupère and Gilbert Torhoudt.

Finally the S.A. Bitumes Ebano which will manufacture and distribute asphalt and petroleum products, was formed with a capital of Fr. 1,000,000 divided into 10,000 shares of Fr. 100 each. This company is closely connected with the Standard Oil Company of Indiana on the one hand and with the German company "Ebano" on the other. The latter already has its refineries situated near Hamburg and holds an important place on the German asphalt market.

THE annual meeting of the shareholders of the Société Malopolska coming almost on the heels of that of the Credit General des Petroles completes, to a certain extent, the information given to the public by the directors of the latter company, concerning the prospective merger. It has however not yet been decided which of the two companies will absorb the other. Fiscal questions will have to be taken into consideration and will eventually decide the matter.

An important item in the director's report is that during 1931 Malopolska produced 2,403,471 bbl. of crude oil in spite of having reduced drilling operations by 25 percent. The company had 865 wells in production and 30 wells being drilled, against 832 and 53 respectively the previous year. A total of 1,910,573 bbl. of crude oil were treated in the refineries (against 1,790,373 bbl. in 1930) and an output of 1,892,303 bbl. of finished products was obtained against 1,758,029 bbl. the previous year. Stocks rose to 914,354 bbl. whereas sales of products in Poland and abroad amounted to 1,650,124 (against 1,838,291 bbl.). In spite of increased production and sales the S. Malopolska only obtained Fr. 315,744,485 for its products in 1931 as compared with Fr. 343,093,995 in 1930.

Gross operating profits amounted to Fr. 88,499,435 on June 30, 1931 and net profits to Fr. 11,448,108 which have been allocated to the special amortization reserve fund.

CIE Financière Belge des Petroles Petrofina announces a gross profit of Fr. 41,585,539 for 1931 which added to the balance brought forward in 1930 makes a total of Fr. 51,898,211. From this sum Fr. 5,495,054 have to be deducted for general expenses, taxes and amortization which leaves a net profit of Fr. 46,403,156 to be distributed as follows: a dividend of 9 percent or Fr. 45.– to shareholders; Fr. 15,000,000 to the reserve fund and the balance Fr. 1,689,583 brought forward.

In 1930 Petrofina paid a dividend of 12 percent or Fr. 60. E. J. ANDRÉ.

New York: March

MARKET action during most of March was characterized by extreme dullness and an inability on the part of most stocks to move decisively in either direction. In the parlance of the market trader there was dullness on recession, indicating

Paris Bourse Prices

1931 Div.	Par	Share	February 16 to March 14 First	High	Low	Last	Change	Position on March 14 1931
30 Lei	500 Lei	Astra Romana	69	84	67	70	+1	125
....	500 Lei	Colombia	..	85	67	67	..	97
50 Lei	500 Lei	Concordia	52	59	49	49	—3	84
....	500 Fr.	Cdré Gén des Pétroles act	..	..	..	..	..	..
....	500 Fr.	Cdré Gén des Pétroles part	..	..	..	..	..	..
....	500 Fr.	Franco Pol. Pétroles act	..	80	68	68	..	85
....	....	Franco Pol. des Pétroles part	225	270	195	..	..	..
1 $	10 $	Franco Wyoming	175	249	175	215	+40	349
20 Fr.	500 Fr.	S. G. des Huiles de Pétrole act	260	317	250	260	..	388
....	....	" " part	66	100	66	89	+23	139
....	500 Fr.	C. Française des Pétroles	—a	545	410	510	..	590
....	500 Fr.	C. Industrielle des Pétroles	504	625	504	540	+36	858
70 Fr.	500 Fr.	Lille Bonnières Colombes prio	625	745	625	661	+36	960
45 Fr.	500 Fr.	" " ord	391	440	370	401	+10	655
....	500 Fr.	Malopolska act	34	49	34	35	+1	57
....	....	Malopolska part	370	495	347	..	..	385
....	....	Mexican Eagle	42	52	42	44	+2	59
....	250 Fr.	Omnium Inter. des Pétroles	84	104	77	85	+1	144
50 Fr.	500 Fr.	Pechelbronn	467	550	455	475	+8	788
60 Fr. B.	500 Fr. B.	Petrofina	..	540	448	448	..	577
240 Fl.	1000 Fl.	Royal Dutch	14500	17650	14500	15100	+600	29500
24 Fl.	100 Fl.	Royal Dutch 1/10	1460	1800	1460	1530	+70	2965
....	1 £	Shell	194	236	194	195	+1	424
25 Fr.	500 Fr.	Steaua Française	210	264	210	241	+31	200

absence of important liquidation and that the line of least resistance would be upward with a little encouragement from business and industry, which have thus far failed to show definite signs of spring seasonal upturn. The tragic death of Ivar Kreuger, international financier, caused a wave of selling in securities representing his interests, and together with the death of George Eastman exerted a sentimental depressing influence offsetting the favorable reaction which might otherwise have been expected to follow Von Hindenburg's victory over Hitler in the German elections.

The defeat of the manufacturers' sales tax in the House of Representatives caused some unsettlement near the month-end. More recently the tax of one cent per gallon on imported petroleum and products was adopted by a vote of 190 to 97 in the House of Representatives. The tax applies to importations of gasoline, gas oil, fuel oil and crude petroleum.

As revealed in the accompanying table, the oil shares displayed mixed trends, their performance on the average being somewhat better than the market as a whole. A year ago East Texas was beginning its meteoric rise in output, whereas now production is quite well stabilized at moderately lower levels. Recent strength in gasoline and crude prices gives promise of much more favorable conditions during the coming season of heavy consumption than prevailed during 1931. This prospect is counteracting the effects marketwise that would otherwise be engendered by the heavy deficits being reported by most major companies.

New York Stock Prices

1932 High	1932 Low	Current Div. $ per Annum	Stock (Par Value $)	Sales (Shares)	February 29 to March 19 First	High	Low	Last	Net Change[1]
12⅞	8⅜	1.00	Atlantic Refining (25)	58,000	10⅜	12⅞	10¼	11	+ ⅞
5⅞	4	....	Barnsdall "A" (25)	28,400	4⅝	5⅜	4¼	4½	− ¼
⅝	⅜	....	Colon Oil (No)	1,800	½	⅝	½	⅝	+ ⅛
7	5⅝	....	Continental Oil (No)	64,400	6	7	6	6	.....
2⅜	1¾	....	Creole Petroleum (No)	5,800	2½	2⅜	2⅛	2⅛	.....
32¼	25⅜	....	Gulf Oil Corp. (25)	17,700	29¾	32¼	26½	29	+1
49	42⅜	2.00	Humble Oil & Ref. (25)	5,900	46	49	44⅛	44⅛	−2
9½	7⅝	0.50	Imperial Oil, Ltd. (No)	6,500	9	9½	8½	8½	− ½
1⅝	1¼	....	Indian Refining (10)	8,800	1¼	1½	1¼	1¼	.....
10½	8¾	1.00	International Petr. (No)	28,700	9⅞	10½	9⅞	10	+ ⅛
7⅜	5	....	Ohio Oil (No)	140,100	5⅝	7⅜	5⅜	6½	+1
19	16	1.60	Pan Amer. P. & T. "B" (50)	200	17¼	17¼	17¼	17¼	+1¼
6½	4	....	Phillips Petr. (No)	54,500	5	6½	5	5½	+ ½
7⅛	4½	....	Prairie Oil & Gas (25)	32,500	5⅞	7⅛	5¾	5¾	.....
5⅛	3⅞	....	Pure Oil (25)	15,400	4¼	5⅛	4¼	4⅝	+ ⅜
¾	½	....	Richfield Oil (No)	3,800	¾	¾	⅝	¾	+ ⅛
23	13⅜	†2.28	Royal Dutch N. Y. (133⅓)	23,200	20⅝	23	17½	17½	−1½
9⅞	6¾	....	Seaboard Oil (No)	99,900	8¼	9⅞	7¾	8	+ ⅛
4⅛	2¾	....	Shell Union (No)	17,900	3¾	4⅛	3½	3½	− ⅛
7⅛	4¼	....	Sinclair Consol. (No)	209,200	5¾	7⅛	5⅝	5¾	.....
4½	2½	....	Skelly Oil (25)	6,000	3¼	4½	3	3½	+ ½
10¾	8¾	1.00	Socony-Vacuum (25)	247,200	9⅞	10⅝	9½	9½	− ⅜
27¼	22½	2.00	Standard Oil of Calif. (No)	72,700	24⅜	27¼	24¼	25	+ ⅝
17¼	14	1.00	Standard Oil, Ind. (25)	87,600	15½	17¼	15⅜	16	+ ⅝
15⅞	12	1.60	Standard Oil, Ky. (10)	11,600	13⅜	15⅞	13¼	13¼	.....
31½	25⅜	§2.00	Standard Oil, N. J. (25)	168,100	28½	31½	28¼	28½	+ ⅛
32	27⅜	1.00	Sun Oil (No)	400	32	32	30	30½	.....
13⅞	10	1.00	Texas Corp. (25)	82,600	11⅜	13½	11⅜	11¾	.....
3½	2¼	....	Tide Water Assoc. (No)	64,900	2¾	3⅛	2¼	2⅜	− ⅜
13⅞	10¾	1.40	Union Oil of Calif. (25)	11,700	11⅞	13¾	11⅞	12¾	+ ¾
½	⅛	....	Venezuelan Petr. (5)	6,400	⅛	½	⅛	⅜	.....

[1] Since close of last month's table. † Paid for 1930—no regular rate. § Including extras.

Stockholders of Barnsdall Corporation on March 22 approved the projected capitalization and bookkeeping changes which were described briefly in our last month's notes.

Seaboard Oil Company of Delaware (formerly Mexican Seaboard) reported net for last year of $123,712, equal to 10 cents per share, compared with $605,873, or 50 cents a share, in 1930. Financial position at the close of the year was strong, current ratio being better than 12-to-1, and cash and equivalent of about $1,875,000 being more than 10 times total current liabilities. In last month's notes a probable net of about eight cents a share was indicated.

The Texas Corporation's 1931 gross of $138,827,076 represented a decline of nearly 27 percent from 1930 and yielded a deficit after all charges (including interest) of $9,954,478 compared with 1930 profit of $15,073,303 equal to $1.53 per share. By virtue of very heavy bookkeeping charges for depreciation, depletion, retirements and amortization (a total of $38,520,436 against $35,203,053 the previous year) cash position remained very strong despite dividends of $22,165,214 paid or declared and capital expenditures of nearly $19,000,000. Ratio of current assets to current liabilities was 6.8-to-1 and there were no bank loans outstanding. Net working capital of $155,486,505 was equal to nearly $16 per share (compared to present market levels around $11 a share) and cash (and equivalent) of $43,553,148 was nearly twice total current liabilities of $26,948,458. President Holmes attributes poor showing mainly to unsatisfactory prices for gasoline both in this country and abroad.

Gulf Oil Corporation reported a 24 percent decline in gross operating income to $196,057,450 and a net loss after charges and interest of $23,670,052. In 1930 net profit of $10,625,252 was equal to $2.35 per share. The striking effect upon oil company earnings brought about late last year through relief from the absurdly low prices of last summer is illustrated by the fact that Gulf earned enough in the fourth quarter to offset the loss of the third quarter, so that it may be said that the entire loss of the year was incurred in the first six months. Company's very strong financial position was well maintained.

Humble Oil and Refining, important subsidiary of Standard Oil Company (New Jersey), made a somewhat better showing than most of the major companies last year, in that a net profit after charges of $2,765,092, or 93 cents a share, was reported. In 1930 earnings were equal to $6.08 per share. Cash and marketable securities of $35,777,696 constituted nearly half of total current assets of $77,909,618 and were three times total current liabilities of $11,614,450.

C. C. Bailey

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London: March

Increased activity and wide price fluctuations have characterized the oil share market during the past month. Most of the support came from the Continent, Paris buying Shells and Amsterdam taking Royal Dutch. This had the effect of bringing about a big advance in all quotations at the beginning of March, many of the less active shares participating. Meanwhile, operators in this country were doing relatively little, and a short position in Shells and other leaders appears to have been built up in London. With the recent rise in the exchange value of sterling, the Continent turned a seller, and quotations came back as rapidly as they had previously risen, most of the previous gains having been eliminated. As prices declined, many shorts covered, and the bear position has now been considerably reduced. One factor which has discouraged buyers in London has been the knowledge that relatively unsatisfactory annual reports are expected from several prominent companies during the next few months. Burmahs have been the only shares to

London Stock Exchange Prices

1932 High	1932 Low	Last Year's Div. % per Ann.	Share	February 15 to March 15 First	High	Low	Last	Change
11/32	9/32	.....	Anglo-Ecuadorian	5/16	11/32	9/32	5/16	.....
1 7/16	1 3/32	17½	Anglo-Egyptian "B"	1 3/16	1 7/16	1 3/16	1¼	+ 3/16
2 1/16	1 23/32	15	Anglo-Persian	1 27/32	2 1/16	1 25/32	1 31/32	− 1/32
9/16	1/2	20	Apex Trinidad (5s)	9/16	9/16	1/2	1/2	− 1/16
21/32	7/16	.....	Attock	9/16	5/8	9/16	19/32	+ 1/32
7/32	3/16	5*	Brit. Borneo (6s.)	7/32	7/32	7/32	7/32	.....
3/16	3/16	5¼	Brit. Burmah (8s.)	3/16	3/16	3/16	3/16	.....
3/32	1/16	.....	Brit. Controlled ($5)	1/16	3/32	1/16	1/16	.....
1/8	3/32	.....	Brit. Controlled Pfd. ($5)	1/8	1/8	3/32	1/8	.....
2 9/32	1 13/16	22½	Burmah	1 29/32	2 9/32	1 13/16	2 1/8	+ 7/32
13/32	9/32	12c.	Canadian Eagle (No par)	11/32	13/32	11/32	11/32	.....
5/8	17/32	.....	Creole (No par)	19/32	5/8	9/16	5/8	+ 1/32
1/8	3/32	.....	Kern River (10s.)	3/32	3/32	3/32	3/32	.....
1 3/8	1 1/32	10	Lobitos	1 1/8	1 3/8 †	1 1/16 †	1 3/16 †	+ 1/16
1 3/32	1/16	6	Mexican Eagle ($4 Mex.)	3/8	1 3/32	1 1/32	1 1/32	− 1/32
26 1/4	21½	40c.	Pan American "B" ($50)	23½	23½	21½	23½	.....
1/4	3/16	2½	Phoenix	3/16	1/4	3/16	7/32	+ 1/32
20 1/8	14	17	Royal Dutch (fl. 100)	16 3/8	20 1/8	16 3/8	16 3/8	.....
2 1/2	1 7/8	17½ *	Shell Transport	2 1/8	2 1/2	2 1/32	2 1/32	− 3/32
9/32	3/16	4	Steaua Romana	7/32	9/32	1/32	1/4	+ 1/32
1 13/32	1 1/4	5	Trinidad Leasehold	1 11/32	1 13/32	1 1/4	1 1/4	− 3/32
3/16	3/32	.....	Untd. Brit. of Trinidad (6s.8d.)	5/32	5/32	3/32	1/8	− 1/32
1 11/32	31/32	17½	Venezuelan Oil Concessions	1 1/16	1 11/32	1 1/32	1 1/32	+ 1/32

Nominal value of shares £1 unless otherwise stated by bracketed figures.
* Denotes tax-free dividend. † Denotes "Ex-dividend" price.
c. Denotes cent per share.

retain any large proportion of the early March price rise. The improvement in Burmahs was more pronounced than in the case of other prominent shares, owing to the market having been caught short, and the relapse has been slower because in relation to the position of the company, Burmahs were considered more reasonably valued than other leaders.

ALTHOUGH Lobitos have lost most of the advance which followed the declaration of an interim dividend of five percent on account of 1931, the announcement was a pleasant surprise to the market. This is the first interim payment made since 1926, and produced the hope that the 10 percent total distribution for 1930 will be repeated for last year. At the annual meeting last June, the chairman stated that the combination of oil production and tanker ownership had been advantageous to the company. Possibly a larger income from tankers may offset to some extent the low average price which the company must have received for its products in 1931.

EXPECTATIONS that Lobitos will again pay 10 percent total dividend in respect to last year has tended to sustain the price. The yield, on this basis, conforms more closely than usual to that on the shares of the big groups, if the return on the latter is based on the 1930 dividends. The accompanying table gives a comparison of yields on some major shares, calculated on this basis.

Yield of Major Oil Shares

	Nominal value	Current price	1930 dividend	Approximate yield
Anglo Persian	£1	1 13/16	15	8¼
Burmah	£1	2¼	22½	10½
Lobitos	£1	1 3/16	10	8½
Royal Dutch	fl. 100	16 3/8	17	8½
Shell Transport	£1	2 1/32	17½ Tax free	8½ Tax free

Anglo Persian, Royal Dutch and Shell have all passed their interim dividends for 1931, and the dividends shown above are therefore no indication of what is to be expected when the accounts are ready. The more cautious market observers expect only 7½ percent tax free on Shell and seven percent on Royal Dutch for the whole of last year. Since Burmah has paid an interim of 2½ percent, against five percent, a further 10 percent is regarded as possible; but all three shares are regarded as high enough for the moment. With Lobitos, the prospect of 10 percent appears more assured, and the fact that the shares do not stand higher in relation to the regular market leaders is undoubtedly due to the fact that the latter, with their wide organizations and large resources, offer better ultimate security, in addition to possessing more extensive "equity" possibilities for the investor.

LONDON and Thames Haven Oil Wharves, which handles a large proportion of the oil products finally distributed in London and the surrounding counties, continued its progress last year, and set up a fresh profit record. Net earnings were £224,240 for 1931, against £221,693 for the preceding year, and the ordinary share dividend was maintained at 15 percent tax free. The distribution absorbed a larger sum, owing to the increased capital ranking, but the undivided surplus was raised from £145,969 to £162,428. The directors state that adequate provision has been made for depreciation, and the balance sheet suggests that some assets have been heavily reduced. A sum of £487,500, received as premiums on new share issues made during the year has been added to reserve, which now stands at £1,300,000, equal to the issued capital. The company's subsidiaries include the Compagnie Industrielle Maritime, owning oil storage at Le Havre, France. This company appears to have absorbed a considerable amount of the parent undertaking's capital, and it remains to be seen whether it will ultimately be as successful.

CONSIDERABLE discussion has taken place on the amended Kessler plan for regulating world oil supplies. The reaction of the market has been decidedly favourable, as it naturally would be to any scheme for bringing production into line with consumption, and the means suggested for bringing in United States producers without infringing legal restrictions is considered ingenious.

NEWS of the appointment of a receiver for Venezuelan Consolidated Oilfields did not come as a surprise to those who have followed the fortunes of this undertaking. The company was registered in 1919 as Trinidad Friendship Petroleum Company, and underwent a capital reorganization in 1929. In 1930 it transferred interests in Trinidad to a new concern, Siparia Trinidad Oilfields, for a shareholding in that company. Siparia Trinidad was largely financed by an issue of shares to Trinidad Leaseholds, Limited, and is now managed and controlled by that undertaking. Despite the outside financing of the Siparia interest, Venezuelan Consolidated has not prospered, and at the annual meeting in September 1931 the chairman stated that the company had been compelled to arrange loans with New Consolidated Goldfields, Limited, and Camp Bird, Limited, against £50,000 7½ percent debentures, secured on the whole of the assets, including the Siparia shares. It transpired at the hearing of the application for a receivership that the security became enforceable if interest on the debentures was two months in arrears, and that, in fact, interest had not been paid for a considerably longer period.

ALEC H. DAY

Gordon M. Jackson, president of the Jackson Engineering Company of Tulsa has been appointed sales manager of Alco Products, Inc., the company with which Jackson Engineering has recently consolidated.

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